Gleanings in Bee Culture

Created to help beekeepers succeed

February -- 1951

Bees for Pollinating Legumes

By Wm. T. Gran, Jr., Perrysburg, Ohio

How One Ohio Beekeeper Furnished 1200 Colonies in 1949

Hives are placed in groups down the center of the field. This requires only one driveway and keeps tramping of the field to a minimum.

Most of us are rather optimistic about the potentialities of commercial pollination. Renting of bees for orchard pollination has been a practice for many years, but due to the limited numbers of bees needed relatively few beekeepers have been involved.

It does seem that the demand for bees to pollinate the enormous acreages of legumes raised in this country will open possibilities for a new branch of our industry. Since commercial pollination is in its infancy, few of us can speak with authority on the subject and one hesitates to

Herman Schaller, farmer, and Wm. T. Gran, Sr., beekeeper, examine results of spraying in alsike field before bees are placed for pollination.

make any conclusive statements because certainly we are going to have to alter many of our present opinions.

Another factor regarding pollination and seed production is the geographic methods that are successful in the midwest may be failures in the West or South. Again pollination, as essential as it is, is only one factor of several if a profitable seed crop is to be produced. First, the farmer must have a good stand with all minerals in the soil so that the plants will be capable of producing abundant seed. Second, injurious insects must be controlled if the plant is to remain healthy. Third, sufficient strong colonies of bees must be provided at the proper time for efficient pollination. Fourth, efficient harvesting methods must be used and this can be one of the major problems to profitable seed production. Last but not least, favorable weather is a determining factor not only during the blooming period but also during the harvest period.

Beekeeper Has a Pollination Service to Sell

The education of the farmer to the fact that honey bees are the only remaining pollinating insects seems to have been fairly successful. It does not seem that the problem of his accepting the fact that he must pay for pollination is as great as preparing ourselves, as beekeepers, to provide the service that will be expected of us. We must realize that in selling pollination we are selling a service and must be prepared to give satisfaction if we are to be successful. This means making a thorough study of all phases of seed production so that we can be of help to the farmer in any relative problem that he might have. This is especially important in cases where unsatisfactory yields are produced so that the reasons can be pointed out to the farmer. In most cases the cause of a poor seed crop has little or no connection with pollination if the bees are handled properly.

Arriving at a Per-Colony Rental Fee

Arriving at a fair pollination fee is something we are all faced with and this again is more or less of a local problem. There seems to be little hope of setting up a universal price for the entire country because of varying conditions. We should all look upon our own operations from the standpoint of sound business and take into consideration all of our operating costs.

It costs money to move bees and there is additional wear on equipment, loss of queens, and greater exposure to bee diseases. Also, managing bees for pollination is not always conducive to maximum honey production. This, of course, can only be learned from records kept over a period of years. So we might say that a fair return from pollination should be our normal operating cost for honey production added to the cost of moving, then subtracting the average income per colony from honey produced. The following figures taken from our estimates at the beginning of the past season are an example:

Average production	75 lbs.
Estimated selling price	10c lb.
Income from honey per colony	$7.50

Visit to farm to inspect field:
30 miles at 7c $2.10
2 hrs. at $1.25, incl. driving time 2.50
Total $4.60

Average cost of moving 20 colonies:
30 miles at 10c $3.00
2 men for 3 hrs. time — 6 man hours
Wages per hr. $1.25
Cost of labor $7.50
Cost to move in $10.50
Cost to move out 10.50

Total cost of moving 20 colonies in and out of field $21.00
Cost to inspect field 4.60
GRAND TOTAL $25.60

Average number of colonies per farm is 20, making the cost per colony $1.28
Average cost of operation for honey 14.00
Total cost $15.28

Probable income from honey 7.50
Amount to be returned from pollination $7.78

We can see from these figures that a return of $7.78 per colony should be realized. Of course, there are many variables in the above figures such as average honey crop, mileage, average number of colonies per farm, etc.

Naturally, the farmer has his operating costs and if he is going to use two colonies per acre his ultimate return from seed produced must justify the expenditure of this amount. Most farmers would consider $7.78 per colony too much to pay for pollination. There are several things that a beekeeper can do which will allow him to modify his prices and still operate a sound business, as we have found in our own operations.

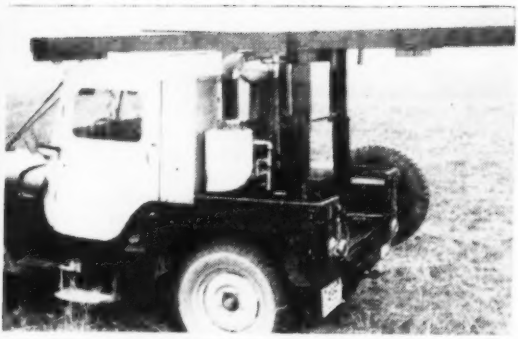
We provided over 1200 colonies for pollination the past year and are convinced that it can be a profitable venture for anyone who has the proper equipment and who is willing to put forth the required effort. Our operations include a custom spraying service, which not only provides additional income to us, but also gives the farmers good insect control at a price cheaper than they could do it themselves.

We use a special high pressure sprayer mounted in a Willys Jeep. This unit is economical to operate, maneuverable, and convenient to drive on the highway when traveling between farms. Our first operation aside from actual operation of bees is spraying clover fields for spittle bug control. This is done primarily to alsike although considerable red clover and alfalfa is also sprayed to increase hay production. (Note: In most cases, seed crops are produced from second cutting alfalfa and red clover in Ohio.) Bees are then moved from fall honey locations into alsike fields at the rate of one colony per acre.

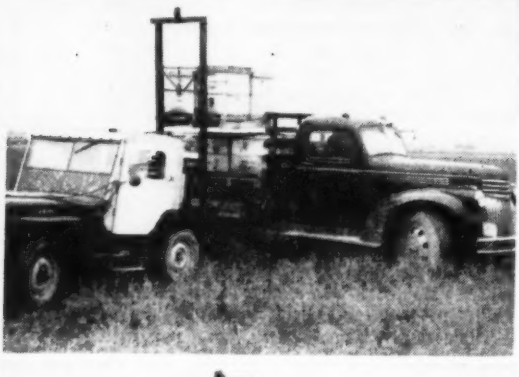
At the end of the alsike bloom the colonies are given a thorough inspection and the honey removed for extracting. Alfalfa and red clover fields are checked at this time to determine the infestation of injurious insects and they are sprayed with the proper material at the correct time.

It is important that the bees be moved in at the correct time. This should be just as the first blossoms are well in bloom. This will cause the bees to orient themselves on the particular field to be pollinated. After the necessary work has been done in these fields we move the bees into fall honey areas to fill up for winter.

Good sheets of brood in the spring mean strong colonies for pollination during the summer.



Power loader with upright folded down for travel on the highway.



Power loader loading hives onto a truck. Unit lifts four hives on pallet which also serves as year-around base for hives.

Power fork lift mounted on four-wheel-drive Jeep lifts hives from ground and places them on the truck. Upright is adjustable hydraulically so that unit can be operated over uneven ground.

Spittle bug is one of the numerous insect pests that attack legume plants in the midwest, damaging both hay and seed crops.

Power Loader Mounted on Jeep

There is a considerable amount of moving involved in an operation of this type, and for this reason we have designed a power loader which mounts on a Jeep. The hives are kept on pallets which accommodate four hives each. The loader is a hydraulically operated fork lift which will lift a pallet with four hives from the ground and place it on a truck or trailer. This process can be reversed, lifting the pallets from the truck and placing them on the ground.

The unit uses three control valves grouped together for convenience. The first lever raises and lowers the forks, the second lever tilts the upright track forward or backward, and the third lever tilts the upright track to the left or right. The tilting adjustments are necessary to compensate for uneven ground. By using this mechanism, bee hives can be loaded with no manual labor as it is not necessary to touch the hives unless to screen them. When a four-wheel trailer is used and towed behind this unit for local moving, one man can handle all the moving and thus be able to cut two-thirds of the cost of moving. By cutting our cost of moving and renting the same colonies for alsike and then for red clover and alfalfa pollination, we have found that we can economically pollinate alsike for $2.50 per colony, and red clover and alfalfa for $5.00 per colony.

Share-the-Seed Plan

We have a number of colonies rented to farmers for alfalfa and red clover pollination on a share-the-seed plan. We used the plan

whereby the farmer paid all costs excepting pollination and we received one-half the seed produced above one bushel per acre. Representative samples were taken from each field and dried, then threshed and cleaned, and weighed carefully so that we could have a fairly good idea as to the amount of seed actually in each field. Tests indicated seed sets for red clover as high as 6.4 bushels per acre and as low as 1.5 bushel per acre. Alfalfa as high as 4.5 bushel per acre and as low as one bushel per acre. However, the fields with the highest tests did not result in the highest yields. We feel that this was partly due to the adverse weather and partly because the farmers did not use care in harvesting the seed. In many cases seed is given a secondary position on the farmer's schedule, and along with the use of side-delivery rakes and inefficient combines, as high as 80 percent of the seed was lost.

While the share plan did not pay us as well as outright cash rental, we feel that actually it does have more to offer the beekeeper from the speculative standpoint. It does not seem that sharing the seed over a bushel an acre is quite fair to the beekeeper for several reasons. First, the beekeeper is taking the greater share of the risk on factors that are beyond his control. Second, the beekeeper's bees had a part in the pollination of the first bushel of seed, and without the bees the farmer would not have produced even that much seed. Some sort of pollination is essential either by wild bees or honey bees.

Chances are that 9 out of 10 times free pollination is coming from the bees owned by a commercial beekeeper who must make a profit to stay in business. To insure his future pollination, the farmer definitely cannot afford to ignore this factor. For this reason we are modifying our share plan for the coming year. We will furnish two colonies per acre and share one-third of the expenses incurred such as spraying, mowing, and combining, and thus take one-third of the seed. If the field seems to warrant four colonies per acre, the arrangement will be shared on the 50-50 basis or sharing one-half of the expenses and taking one-half of the seed. We have arrived at this plan rather simply. The farmer can make about $20 per acre for second cutting alfalfa from the hay. If he leaves it for seed he must clear at least this amount above expenses to make the project worthwhile. If we are to place two colonies per acre for pollination, we must receive $5 each, or $10 per acre. Adding this to the $20 the farmer must receive, $30 per acre must be realized above expenses. Since we then have one-third of the total at stake we should share in one-third of the expenses as well as one-third of the profits, regardless of what they are. Of course, it is a simple matter to figure the proportions where four colonies an acre are used. We feel that this same basis is equally fair for the pollination of red clover and will use it until conditions require its modification. This plan does not pay quite as well as the other where yields are over three bushels per acre, but when yields are less than three bushels the beekeeper will be ahead in respect to the other plan.

All in all, commercial pollination has a lot to offer both the farmer and the beekeeper if it is operated on a sound business basis, and it can mean profitable seed production for the farmer and fair returns for the beekeeper.

The farmer must realize that the beekeeper is entitled to a fair return for his service and the beekeeper must realize that pollination is a service and be prepared to render it satisfactorily. Progressive farmers are good business men and they will give their business to the beekeeper offering the best service and not necessarily the cheapest.

Bee Stings for Arthritis

By A. B. Tandy, Oskaloosa, Iowa

I see on page 698 of November number that a man used bees to cure a sore thumb. Well, I used some bees to cure a bad case of arthritis in my left shoulder and forearm. I took a small pair of tweezers to pick up the bees and put them on my shoulder and arm.

I think I applied them three mornings and the arthritis left me and I haven't felt it since. That was four years ago this spring.

An Unusual Opportunity

By J. E. Eckert, University of California, Davis

Those who will be connected with the beekeeping project of the Lanai City Agricultural call are Riley Ewing, principal, Kengo Takata, agricultural instructor, and I. Tamura, former caretaker of the bees, who will render assistance until the class can take over.

The Hawaiian Pineapple Company, operating on the island of Lanai in the Territory of Hawaii, has given the vocational agricultural class of Lanai City High School an unusual opportunity to make a beekeeping project render a distinct service to the school. It is an opportunity that excels anything that has come to my attention either here in the states or in any other part of the Territory of Hawaii. The company presented the school with 185 colonies of bees together with an extractor and extra frames, hives, and other equipment with the expectation that they would learn to operate the colonies in an efficient manner and to the interests of the students of agriculture. Without knowing anything about beekeeping, the principal of the school, Mr. Ewing, and the agricultural instructor, Mr. Takata, accepted the gift and intend to do their best, with the aid of the students, to develop it into a paying project. That is the story back of this generous and public-spirited offer.

Beekeeping on Lanai began around 1910 when between 200 and 300 colonies were brought from the island of Maui by the Lanai Company. The colonies were located in the kiawe along the east and northeastern shoreline. This part of the island is subject to strong prevailing winds which at times handicap the bees in their work. There is little else for the bees to get in that district but the pollen and nectar from the kiawe. Even their drinking water has to be provided from water piped from wells run by windmills or piped from the mountains.

The Hawaiian Pineapple Company acquired title to the island in 1922 or 1923 and maintained the apiaries **for the benefit of their cattle.** The kiawe, or algaroba, is a legume and produces beans which are used as cattle feed. It has been estimated that a kiawe tree which has a spread of 30 feet may produce as much as 500 pounds of beans a year, so the bees are maintained for the purpose of pollinating the blos-

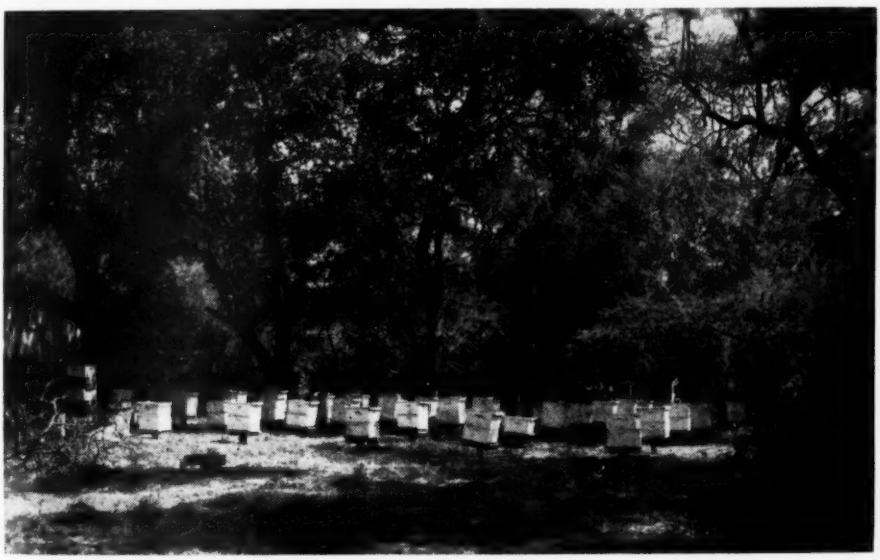
soms to produce more food for the cattle.

At the time of my visit in the summer of 1950 to inspect the colonies on Lanai, I found that the company was closing out its livestock business and did not wish to continue with the bees. The colonies were located in four apiaries along the coast, so well hidden from view that we missed two of them on the first visit and had to make a return engagement to inspect them. This mistake was a fortunate one for it enabled me to meet the agricultural class, the teachers who will be involved in the project, an interesting Japanese beekeeper who had literally grown up with the industry on Lanai, and the farm manager, Mr. Cleghorn, who, I believe, is largely responsible for this novel disposition of the colonies.

Most of the hives were heavy with kiawe honey for they had been extracted but once. The queens were confined to the lower stories by queen excluders and the supers were provided with only six or eight frames. None of the frames were wired, either in the brood chambers or supers, and many of the brood combs were irregular and contained many drone cells, granulated honey, and other defects. Some of the supers were filled with crossed combs or did not have a full complement of frames. Most of the combs were sealed and the honey was heavy and water white. Some colonies had swarmed twice and were weak while in each apiary sets of combs had been destroyed by the wax moth.

The class has been given permission to operate the colonies on their present sites because it would be difficult to move them in the present condition of the combs. The "road" to the apiaries runs along the shoreline, sometimes through the kiawe and up washes that look more like rocky stream beds than a road. Each apiary has an extracting house and the 4-frame hand extractor is moved from one apiary to another. A portable extracting outfit would be preferable and more convenient if it could be pulled over the road.

The class can study the life history and habits of the bees this winter and get frames ready to replace the poor brood combs as soon as the kiawe blooms in the spring. Then they will have to cut out and melt up the combs of granulated honey to provide more room for the new honey crop and prepare the frames for future use. If the brood combs contain brood, they will have to be placed above the queen ex-



One of the apiaries in a kiawe grove. Many stands are grown over with weeds, indicating a size twice as large as at present. The stands are coated with grease to keep out ants. Each of the four apiaries had an extracting house.

The "road" between the apiaries ran along the coast and was bordered by kiawe trees which indicated the force of the winds from the sea.

cluder until the brood emerges. By that time the combs may be filled with honey again and can be extracted before being rendered into wax. They will also have to construct a solar wax melter and learn how to operate it and a wax press to secure the best return from wax production.

Since the instructors and students have had no experience with bees, I predict that many interesting and exciting experiences will be in store for them this coming year. Kiawe honey granulates within two or three weeks after it is stored and to preserve the combs, colonies have to be extracted every two or three weeks during the blooming period of the kiawe. Since honey is comparatively low in price and wax is high, it may be more economical to force the bees to build all of their storage combs from starters and to render all of the super combs into wax at the end of the season, leaving only enough honey for the bees to winter. This would call for an efficient system of melting the combs without injuring the honey unless the honey is fed back to the bees to cause them to make more wax.

If the class is successful in its project it should net not less than $500 which could be used for teaching aids such as charts, maps, books, a microscope, or better beekeeping equipment. At the same time the students should receive training in a profession which many will enjoy and which a few can use as a vocation in future years. Fortunately, Mr. Tamura, the former beekeeper, and others on the island are willing to assist the instructors and students in this undertaking. The Extension Service of the University of Hawaii will undoubtedly give them advice, or even supervise the project to insure its success.

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Siftings

"Cyanogas can be a great help to the commercial beekeeper, but if you get careless with it once you will never use it again." — Taken from November 1950 New Zealand Beekeeper.

[Note: How true. Some beekeepers have lost their lives handling Cyanogas by inhaling the fumes which are deadly poison when applying Cyanogas at the entrance of the hive of bees that is to be killed. Stand on the windward side and hold your breath.—Ed.]

Four Ones are Four

By M. J. Deyell, Medina, Ohio

[I hesitate somewhat about telling this story which is the unvarnished truth, but if I don't tell it, present day readers of Gleanings will never know what was done by The A. I. Root Company in migratory beekeeping over 35 years ago.—Ed.]

Four ones are four—yes, that is what I learned in school and that is what we found out some years ago—the spring of 1914 to be exact—when we shipped four cars of bees from Randlett's Landing, 16 miles north of Apalachicola, Florida, to Medina. But to go back a bit, we had shipped a car of 300 colonies of bees to Apalachicola in November of the previous fall. That was the fall of the heavy snowstorm in Northern Ohio during November and we had to dig hives out of snow banks when loading them onto the car bound for Florida.

During the winter and early spring months three of our men, including the late J. E. Marchant, foreman of the Root Company apiaries, nailed up hives and put full sheets of foundation into frames in preparation for the early spring and the tupelo flow which starts in April and continues into May. The men lived with the bees in a lodge built on the staging on which the hives were placed, right beside the river and high enough to escape floods or high water at different seasons of the year.

My First Trip South

It was the 19th of April, a cold snowy day, when I left Medina for Randlett's Landing to help prepare a carload of bees for shipment to the North. I shall never forget the change in temperature and scenery on the way down. After riding all night from Cincinnati to Montgomery I woke up in the morning to find green grass and vegetation about six weeks in advance of what we had in the North.

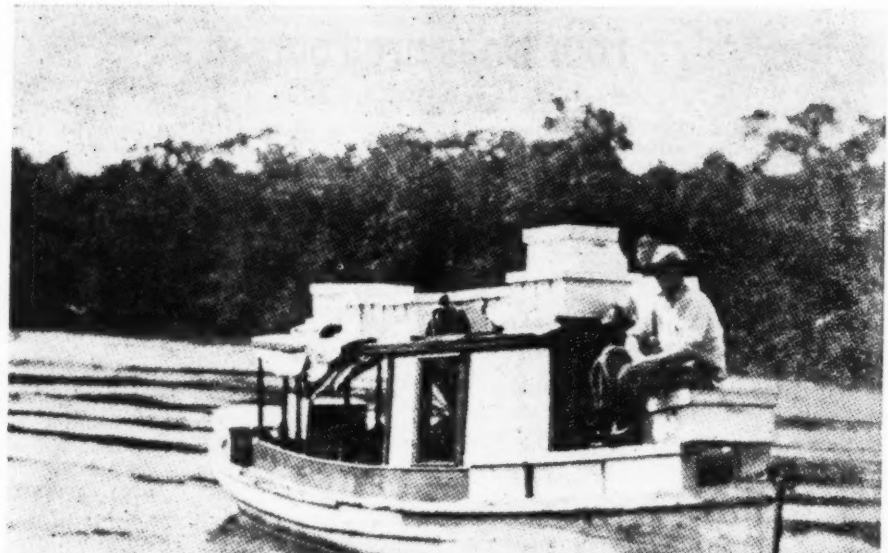
From Montgomery I took the Atlantic Coast Line Railroad and got off at a little place called Climax, Georgia. I suppose it is still there although I haven't visited that section of Georgia since. After remaining there overnight I rode a narrow gauge railroad to Apalachicola. This was an interesting trip. The small locomotive was fired with wood. I got on the good side of the engineer so he let me ride beside him in the cab. That was a real thrill.

I still have a mental picture of our riding over those sluices with long piles extending from the track down into what seemed like a bottomless pit resembling jungle land. These piles would sink down into this mire as the train passed over and then would return to normal position after being relieved of the weight of the train. In due time we arrived in Apalachicola, and I then took a small motor launch up to Randlett's Landing, a distance of 16 miles.

A True Snake Story

I was very much taken with the general appearance of the country there, which was semi-tropical. Naturally, I didn't want to miss a thing. After meeting the boys at the lodge I walked down the ladder from the Landing to the ground, and into the wooded area nearby. As I passed by a log, what should I see but a huge water moccasion coiled up with his head protruding in my direction with his tongue ex-

This giant snake must have measured six feet in length. Sorry we didn't measure it.



The small motor launch which took us up to Randlett's Landing. It was also used to move bees up and down the river.

tending from his mouth. It was a rather gruesome sight and I was uncomfortably close to the snake.

When passing through the workshop I recalled having seen a shotgun hanging up so I rushed back to the shop, grabbed the gun, loaded it, and returned to the snake. Sure enough he was still there. After shooting his head almost off I held him up by the tail. I still have a picture of the snake and he was so long that the photographer could not get him all in the picture without standing back quite a distance. One of the Southern boys—Joe Anthony, now living in Apalachicola—picked up the snake before it was dead and hung it around his neck. I wouldn't have done that.

Interesting Days Ahead

During the first week I was there I got up a while before breakfast to go out to shoot squirrels. The boys who had been there all winter said to me, "After you have been here a while you will get like the rest of us, and not get up until you have to."

The day after arriving in camp I helped the boys extract some tupelo honey. The flow started just before I arrived. By the way, I have seen quite a number of honey flows in my time, but never have I seen bees work so fast and so long each day as at Randlett's Landing.

Late in the evening bees laden with nectar would drop down to the alighting boards of the hives and crawl in, apparently weary, following a hard day's labor. It is probable that many of the bees did not get home, but remained on the blossoms overnight, then returned the following morning.

I noticed one thing in particular about the South: there is very little

twilight. When it starts to get dark it gets dark in a hurry. The very opposite is true up in Saskatchewan, Canada, where I had spent a few months some years before. The long twilight extends into the night. It was possible in Saskatchewan to work outside until 10 p.m. As a matter of fact, during the longest summer days the sun remains below the horizon only a few hours.

Our Objective: Increase in Bees

Prior to the tupelo honey flow, and at the beginning of it, we divided the colonies, making three or four nuclei out of one strong colony. To each nucleus we gave a young laying queen. It is remarkable how quickly such nuclei will build up during a good flow.

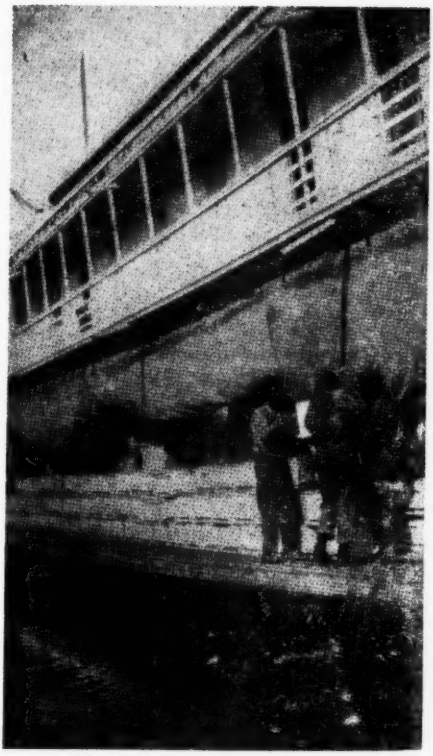
When making up nucs we would usually take them to another location up or down the river at the time they were made up when young queens were introduced. This meant that all the bees would remain with each nuc instead of drifting back to the hives from which they were taken, as would be the case if the dividing were done in the same apiary.

In spite of making many divisions we did secure some very fine tupelo honey—around 10,000 pounds. This honey came in during a period of two or three weeks. The flow was progressing nicely when all at once a sort of blight struck the blossoms and the flow shut off suddenly. The bees began to rob and it was difficult to manipulate the colonies.

Starting North with the First Car of Bees

It was quite a job to get 300 colonies ready, each in a single-story ten-frame standard hive, screened top and bottom. Each hive contained from four to six frames of brood well covered with bees and combs with some honey. These were loaded onto an old-type river boat, a back-wheeler of the type Mark Twain rode on years ago. The idea was to take the bees up river about 100 miles to Bainbridge, Georgia, where they would be loaded into a 40-foot stock car for the remainder of the trip.

The hives of bees were lined up at the dock quite early in the morning. In due time the river boat came along and was ready for the loading. Colored help was used for carrying the hives onto the boat.



The old river boat with bees loaded on the lower deck, ready to cast off.

An Amusing Incident

While the hives were being loaded it suddenly became apparent that someone had overlooked stapling a bottom screen onto one of the hives. When this hive was picked up by a colored man, hundreds of bees poured out of the bottom and stung him and the others nearby. The hive was dropped on one corner which made matters even worse. The colored gentleman made for the tall timber as fast as his legs would carry him. After a long time he reappeared on the scene with an eye swollen almost shut. One of the colored fellows said, "Nigga, come heah until I pull that 'stung' out o' your eye."

It took almost 24 hours to make the run from Randlett's Landing to Bainbridge, Georgia. That river is so crooked that at one point we had to stop and back up a ways to get around the bend. It was not uncommon to see an alligator sunning himself on the bank. As the boat stopped at different landings that

night I could hear the deck hands loading barrels of resin. On looking out through the window of my cabin I could see those giant negroes, each with a small barrel of resin on his shoulder, walking down a narrow gangplank. They kept up a sort of chant, presumably to ease their arduous labor, and to help them keep in step as they walked that narrow gangplank.

Loading the Car

It took almost half a day to build stagings in the stock car ready for the bees. These were built to hold three tiers of hives on each side of the car, leaving a narrow alley way in the middle. Each tier was three hives wide. It was necessary to have stout upright 2 x 4 pieces spaced at proper distances to support the staging. I helped to nail these pieces myself as I was planning to ride in the car with the bees on the trip North.

Along about five o'clock in the evening the hives were loaded. My camp bed was located near the door at one side. I shall never forget the strange feeling that came over me as the fast freight moved out of Bainbridge that evening on the Atlantic Coast Line bound for Montgomery, Alabama. When darkness came I lighted a lantern and hung it on a large nail driven into a post. As the train rounded a curve the lantern swung back and forth like the pendulum of a clock. I did not get any sleep the first night.

The Bees Drank Four 50-Gallon Barrels of Water Enroute

I forgot to say that enough space was left in the middle of the car for two large barrels containing water. The following morning when the train stopped, the weather was hot enough to cause the bees to roar. This was early in May and the weather in the South usually becomes rather hot at that time. I had a sprinkling can that I filled with water to sprinkle on the top screen of each hive. The water ran down through the bottom screen onto the screen of the lower hive and in due time entered the hive on the lower tier. That was an ideal arrangement. However, I could sprinkle the lower tiers of hives if necessary, as sufficient space was left between the rows of hives to permit it.

After reaching Montgomery, the car was transferred to the L & N Railroad leading into Cincinnati. That train certainly did make good time. I managed to pick up some lunches along the way. All of the water in the barrels was used up long before reaching Cincinnati and it was necessary to have them replenished. During one stop a colored fellow from a nearby shack became quite inquisitive and walked up to the car door. A bee suddenly flew in his direction close to his head. He began fanning the air furiously and then started off on a dead run. When I last saw him his arms were going like a windmill and he was disappearing rapidly over the hill.

It took six hours to work our way through Cincinnati during the night. That was a rather tiresome ordeal because I was unable to sleep soundly because the car was shunted about almost continuously.

It is terribly spooky in a dimly-lighted railroad yard late at night. I was afraid some hobo might tap me on the head with a stick in order to relieve me of what little filthy lucre I had on me. The car door was open. I decided then and there to carry a six shooter on the next trip, about which I will tell in the next installment.

We were transferred onto the Big Four, and in due time reached the town of Carey, Ohio, which is located on what was then called the Northern Ohio Railroad and is now called the A. C. and Y. Having arrived in Carey about noon we did not have long to wait for the N. O. train. We reached Medina about four o'clock in the afternoon. It had taken us four days to travel from Bainbridge, Georgia, to Medina, Ohio.

The bees were unloaded that evening and taken to the various apiaries. The fruit bloom and dandelion flow were on around Medina which made it possible for these colonies which were not quite up to full strength to build up rapidly. Not a colony was lost enroute.

It is fortunate that we reached Medina late in the aftrenoon. Had we arrived in the morning of a hot day we could not have liberated the bees without considerable drifting.

(To be continued)

How Long Does a Bee Live After Losing Sting*

By M. H. Haydak

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In discussing the question of how long a bee lives after losing the sting, Huish, an English beekeeper of the beginning of the last century, wrote: "The wound which the bee makes is always fatal to it; when it wishes to withdraw the sting, it remains in the wound . . . and with it the bee loses the vessel of venom which is at the root of the sting, and the ligaments to which it is attached. The bee thus wounded cannot live a long time; it perishes after having made war in the manner of savages with poisoned arrows." According to Linde's and Zander's observations, the death of a bee that has lost its sting may occur after five, six, or even eight days. In the opinion of the majority of beekeepers such a bee lives only a few hours.

In order to ascertain the length of time a bee lives after it has lost its sting a series of experiments were started at the Minnesota Agricultural Experiment Station. The procedure was as follow: The bees were etherized. After that a certain number of them were placed in a screened box. These bees served as controls. Then the stings of a number of bees were extracted by letting the bees sting a piece of chamois. This method approaches very closely the way bees normally lose their stings. These bees were also placed in one or more screened boxes. The control and the experimental bees had access to water and sugar solution which was given to them in small inverted vials with the openings closed by a double layer of cheesecloth. Dead bees were removed from the cages daily and counted. The results of this experiment are presented in Table 1.

From the table it is evident that the older the bees, the greater the mortality at any given time. This was true both for the control and the stingless groups. However, the bees without stings lived a considerably shorter time than those which had their stings intact. The age of the bees played an important role in this case. Only 28 percent of the stingless bees not over 7 days old died during the first 42 hours, while in the group of the stingless field bees 84 percent died during the same period. About half of the stingless bees of the other age classes died during the first 42 hours. The mortality of the controls in the same period was from 0 to about 5 percent in the younger group and 27 percent in the field bees. After 114 hours, 90 percent of the stingless bees not over 14 days old were dead while the mortality of the older stingless hive bees was about 95 percent. Practically all

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Table 1.—Mortality of bees losing sting

Kind of Bees	Total No. Bees	Mortality percent after (number of hours) 12	18	42	66	90	114	138	162	186
Bees not over 7 days old										
Control	100	0	0	0	0	0	0	0	0	0
Stingless	105		5	28.5	64.8	82.0	90.0	90.0	95.2	97.1
Bees not over 14 days old										
Control	100		2	4	4	4	4	4	4	4
Stingless	143		19.5	42.7	56.0	74.1	90.0	92.4	97.2	99.4
Bees not over 22 days old										
Control	105		4.8	4.8	5.7	7.6	9.0		11.4	12.4
Stingless (3 samples)	310	8.0	22.7	57.9	85.3	93.3	96.5	98.4	98.1	99.0
Bees taken from the top story										
Control (2 samples)	211		1.9	3.3	3.3	4.8	8.0	9.9	12.7	14.2
Stingless (4 samples)	457		9.0	60.6	82 2	92.9	95.0	97.1	97.5	98.5
Field bees caught leaving the hive in the morning										
Control (3 samples)	239	2.2 (4 hrs.)	6.0	27.0	42.0	41.3	58.6	66.2	80.0	
Stingless (5 samples)	424	43.6 (4 hrs.)	58.3	84.7	97.5	99.0	99.0	100.0	100.0	
Stingless (fed)	47	2.1 (4 hrs.)	19.1	55.3	89.4	95.7	100.0			
First exploratory experiment. Bees from top story. Stings extracted with forceps.										
Controls	105		13.0	16.0	18.0	19.0	23.0	25.0	27.0	31.0
Stingless	94		23.4	45.7	62.8	74.5	83.0	85.0	88.3	93.6
Stings with intestines extracted	40		95.0	100.0						

the stingless field bees were dead 90 hours after losing the sting. In the younger group there were some isolated cases where a stingless bee lived 7, 8, 9, 10, 13, and in one case, even 19 days. At the end of 19 days 45 percent of the bees in the control group had died. In an exploratory experiment 95 percent of bees that lost their intestines with the sting died within 18 hours. None of them lived over 42 hours.

It is of interest to note the behavior of the experimental bees. Younger bees both normal and stingless, as could be expected, were quiet. The field bees were extremely excited. However, while only 2.2 percent of the field bee controls died during the first 4 hours, over 43 percent of the stingless ones died in the same period. Since there was very little food in the honey stomachs of the field bees, one group of the latter was fed sugar solution before the stings were removed. The mortality of these bees during the first 4 hours was much lower. However, by the end of 90 hours 96 percent of the fed bees were dead, only 3 percent less than in the case of the unfed bees.

There was considerable defecation (discharge of excrement)* in the control bee cages except in the case of the field bees, where few feces were noticeable. This is understandable because the recta of these bees were practically empty. Defecation was never observed in the stingless bee cages. Examination of these bees showed that there was a complete occlusion (closing) of the anus after the wound healed. Younger stingless bees had their abdomens swollen.

*The explanations in parentheses are the editor's.

Summary

The percentage of mortality correlated with time was determined for various age classes of bees that had lost their stings. The older the age class the greater was the percentage of mortality at any given time. Ninety to 99 percent of the stingless bees of all age classes were dead at the end of 114 hours. A few individual young stingless bees lived as long as 7 to 19 days.

Conclusion

Approximately 50 percent of bees which are active outside the hive (field bees) die within 18 hours after losing their sting; most bees of all age classes die within 114 hours after losing their stings. A few bees which lose their sting at an early age (not over 22 days old) may live as long as 7 to 19 days after losing their sting.

Literature:

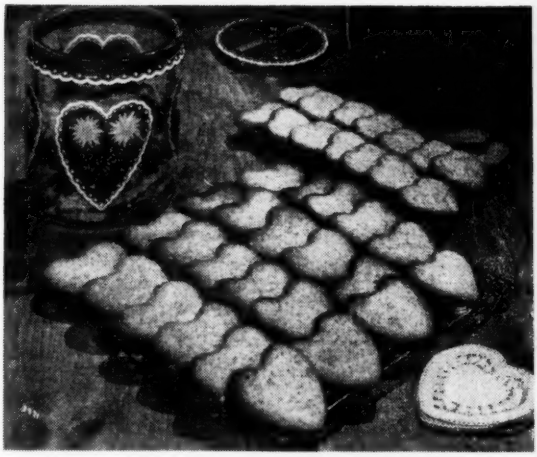
Huish, R. 1815. "A treatise on the nature, economy, and practical management of bees." London. pp. 414.

Zander, E. 1946. "Der Bau der Bene." 3rd E. Eugene Ulmer, Stuttgart, pp. 190.

A large apiary near Redlands, California, one-half mile from a 300-acre orange grove. The hives are owned by Elijah A. Bethurum who started years ago with a few swarms of wild bees put into hives made from redwood. He now has his colonies in standard hives and produces top grade honey.

Honey Valentines

By Mrs. Benj. Nielsen



Honey hearts for those extra special valentines. —Photo courtesy Kellogg Company.

Small fry promoting valentine giving? Perhaps urging something special for the teacher or that best boy, best girl friend? At our house, while the kiddies were still interested in valentine exchanges, we had lots of fun working out extra specials within tiny allowances, aided and abetted by Mom's honey-way larder. One year we cut fairly good-sized hearts from cardboard, placed each one in the center of sparkling red cellophane sheets, heaped with honey-way goodies, and catching the ends together, tied them with white cord or narrow ribbon and tipped each end with tiny red hearts cut from construction paper. A large valentine for teacher, smaller ones for friends.

Another year we cut red valentine hearts, topping each with a lacy paper doily slightly smaller than the cut-out. These we heaped with honey goodies, and using clear cellophane, this time we drew it taut to display the tidbits within, and sealed the edges with tiny red gummed heart stickers.

And one of the nicest things about preparing these valentines is the fact that you need not wait until the night before to make candies, cookies, and what-have-you, then rush around to package them. Because honey is used in the makeup, you can prepare these goodies days before, package at leisure, and rest assured they will be delightfully fresh and flavorful.

Use any of your favorite honey candies or cookies, or try these:

Honey Hearts

One-half cup butter or shortening, ½ cup honey, ½ cup ready-to-eat bran, 2 cups sifted flour, 1 teaspoon soda, ½ teaspoon cinnamon, ¼ teaspoon cloves, ¼ teaspoon allspice.

Blend butter with honey; beat until creamy. Crush bran slightly; add to first mixture with sifted dry ingredients. Mix thoroughly; chill. Roll dough on floured board to about ⅛ inch thickness. Cut with floured heart-shaped cookie cutter, and bake on greased baking sheet in moderate oven, 350 degrees F., about 10 minutes. Yield: 5 dozen cookies.

Honey Dried Fruit Candy

Two cups dried fruit (equal parts of any two or more dried fruits), 1 cup nuts, ¼ cup honey, ⅛ teaspoon salt, and 1 cup dry flake cereal.

Grind dried fruit. Chop nuts fine. Mix with honey and salt. Pat out in a flat sheet and pack under a weight for 24 hours. Cut in any desired shape and dust with crushed flake cereal. Grated orange or lemon rind may be ground in for variation.

Honey Crisps

One-half cup sugar, ½ cup honey, ¼ teaspoon salt, 1 teaspoon vinegar, and 5½ cups oven-popped rice cereal.

Cook sugar and honey, stirring only enough to prevent burning, to a temperature of 270 degrees F. (hard ball in cold water). Remove from heat; add salt and vinegar. Put rice cereal into large buttered bowl and pour in honey syrup; mix well. While hot, drop by spoonfuls into buttered muffin pans, or form into balls or heart shapes. This mixture may be pressed into shallow greased pans and cut into bars when cool. Yield: 20 balls, 2 inches in diameter.

Aurora, Nebraska

A sign that can be plainly seen by passing motorists is one of the best advertising mediums.

Know Your Market

By Charles W. Gouget

Glen Ellyn, Illinois

Every beekeeper should know his market well enough to be able to estimate his own demand for the season. The cumulative effect of the accuracy of this estimate will determine the price he will receive for his honey, and ultimately his standard of living. To be a little short of the calculated estimate may be better in the long run for the honey industry than to be caught with uncalculated surpluses that cannot be disposed of, or which may be carried over to the next season to "pyramid" more surpluses. Surpluses lead to lower prices, and aging results in the loss of flavor and aroma, the two factors which usually make honey preferable to cheaper sweets.

According to the U. S. Department of Agriculture, honey stocks on hand this year are the largest since 1942. This means that every beekeeper must exercise his best ability as a salesman this year, and his best judgment as a producer next year, if he intends to maintain a price.

Every market is a different problem involving different combinations of factors to produce maximum sales. Among the most important of these factors in the marketing of honey are: weather, color, quality, size and shape of the container, price, and marketing methods. If your sales are on the increase you are probably doing a good job, but often a better job could be done if an analysis of the situation could be made.

Weather

The sale of honey is affected by weather probably more than most of our common energy foods. Those who have tried to sell honey during warm weather know this fact to be true because at such times honey will not move as readily as in cool weather.

With the approach of cool weather in October honey will begin to move, and at this time the beekeeper should bend every effort to attract attention to his product. Quality honey, neatly packaged, should be placed in conspicuous places in grocery stores and on roadside stands. Large signs should be used to focus attention wherever possible because honey is a seasonal product and is often forgotten from year to year even by those who enjoy it. This group may buy a lot of honey if they can be reminded soon enough.

Color and Flavor

A beekeeper friend who produces comb honey once found that the bees were filling the combs with buckwheat honey. A little detective work revealed that 15 acres of buckwheat had been planted near the

apiary and the bees were working the flowers with considerable enthusiasm. The comb honey supers were replaced as quickly as possible by extracting supers, and as one would expect, a large crop of buckwheat honey was obtained that season.

Since the market for buckwheat honey is usually very poor in most localities the beekeeper decided to advertise what he considered to be a white elephant. In order to obtain something for his labor he decided to list the price comparatively high.

Not long after advertising, a Polish storekeeper from Chicago arrived at the apiary and bought the entire buckwheat honey crop at the stated price. In addition, he wanted to contract for an equal amount the following year at a higher price.

This example is given to show that honey has its local peculiarities, and a product that may have little or no value in one locality may have considerable value in another. The same fact is true of other products such as apples, eggs, and even soap. Often a green apple will not sell on a red apple market and vice versa; a brown egg may not sell on a white egg market, and the same idea is often true of soap.

Light honey has the most popular demand, but darker types may often sell well to special nationalities with particular tastes or to industries that have special uses for them. The problem of disposing of darker types of honey seems to be largely one of connecting the producer with the proper user.

The thing that places honey at the top of the list among carbohydrate foods is its flavor. Comb honey has a flavor of its own because the aroma and flavor are sealed until the time when it is eaten. For this reason comb honey is preferred by many people. Since flavor determines the market for liquid honey as well as comb honey, the producer's marketing problems can be reduced considerably if he can maintain the natural flavor of his honey. To maintain this flavor the honey must be heated under controlled conditions so that it is not overheated. Temperatures above 160 degrees F., reheating, and even standing over long periods of time will do much to impair the flavor and the color.

Planning one's production for the season, therefore, becomes a very important part of maintaining a high standard necessary to produce an expanding market. Marketing one's entire output insures a fresh supply each season with better color, taste, and aroma, and places honey in competition less with cheaper sweets.

Size of Package

The fact that a small jar of honey will not sell is not necessarily proof that a larger jar may not sell better. A good example will help to make this fact clear: A grocery store located on a main highway handled only one-pound jars of honey which seemed to move rather slowly, and because of this fact the grocer was reluctant to try larger ones because he reasoned: "If small jars will not move, why should larger jars move better?" In this particular case the answer to the question lies in the fact that the store is located on a main highway. Tourists going on a vacation or coming home from a vacation usually prefer the larger jar because it is usually harder to obtain from the neighborhood grocer. Because the large jar is not a common item on most grocers' shelves it carries the inference that the honey is bottled at the apiary instead of at the usual source of the one-pound jars of honey—that is, at some food-processing plant. Further, honey bottled at the apiary should have "real" honey flavor.

Sales Increased Over Night

The grocer finally consented to try three-pound jars of honey in addition to his one-pound package, and as a result, almost as if by magic, honey sales increased over night. When the season ended, this grocer had sold almost 700 pounds of honey, most of it in three-pound jars.

This unusual example seems to show that a beekeeper should make every effort to determine the kind of demand he really has. In order to analyze the situation it may be necessary for him to supply the grocer with his full line on consignment, and in the end he may find that he has been barking up the wrong tree for years.

Price

The producer who sells his honey

(Continued on page 124)

Second Glances

C.M. Isaacson

That January cover picture is a good one to begin the year, including as it does, reminders for both winter and summer — at least for beekeepers in the North who see snow piled around their hives and wish for those days ahead when the scale hive is adding new pounds to the chart daily.

The advantages of different races of bees can vary much according to the location, and even the weather experienced during respective seasons. Italians usually build up more rapidly for me during an unfavorable spring, while Caucasians (or a Caucasian-Italian cross) are often markedly better at getting ready for winter as regards filling their brood nests with honey. One of Mr. Stricker's statements — that he doubts that there is an absolutely pure race of bees in the country today — will be disputed strongly, I fear, but there IS much truth in his statement, especially with the darker races (pages 9 to 12). As for raising one's own queens, it is an excellent idea if one has the ability and the time for the detail required. And after all, with the double brood chamber system in common use a good percentage of queens are superseded each fall as a natural thing (I have seen it as high as an estimated 75 to 80 percent.)

Yes, congratulations and more power to the Baxters — father and son. Such a team, really working together, can accomplish wonderful things (page 13). Most of all, one can admire the courage with which they went through adverse days, for I can well imagine that the son was no small help to his father through those times.

Beekeeping in India has great difficulties to contend with — the lack of official interest, absence of any really suitable movable frame hive, ignorance of beekeeping in general, etc., being a few (page 16). Let us hope that the strong enthusiasm of the few can win over the poverty of the many — and let us also give whatever help we can in the way of encouragement, and otherwise.

The reasons for the winter bee transferring were sound (page 20). It would reduce to a negligible degree the danger of spreading disease and in general make the whole task a faster and easier one. It would be of interest to know the final disposition of the colony.

Snow can be good winter protection for bees if not too deep (page 21) but I have found damp hives and greatly weakened clusters (with plenty of food) where covered by an extreme depth of snow for long periods.

The total absence of foulbrood in Holland is a fortunate thing, what with the use of skeps which cannot be well examined for disease. They do have the advantage of being made of a plentiful and cheap material, however, which is a big factor where building materials are scarce and restricted (page 22).

That tobacco smoke stupifies but does not kill insects such as the so-called "bee louse" is a logical statement (page 23). Many old time beekeepers used it to quiet their bees and I was told by one that he had seen practically a whole colony sluggish and unable to fly from too heavy use of it, but that they recovered after a period of fresh air. In that young virgin requeening method mentioned by "P. J.", I would say that it is the new queen that usually, if not always, does the "dequeening"—if the other bees allow her to do so.

The differences caused by locality are illustrated by Chas. Koover's article (page 24) where he mentions superior wintering in one story and his implied dislike that his bees began their brood nest in the lower story of a two-story hive. Here we would think that last to be very fine — it is what we want, in fact —and it is very hard to get the bees to put enough honey in one story for our long winters. And if one puts in too many full combs late in the fall, the bees cannot arrange their brood nest as they wish.

Honey and apples are twins, says Mrs. Nielsen (page 27). In the several ways she sets down for combining them, it would certainly seem a true statement — each one complementing the taste appeal of the other.

From the Field of Experience

Mice in the Bee Yard

By Stanley A. Benson, McFarland, Wis.

Mice seem to have a way of getting into some of our hives in the winter notwithstanding the most careful preparations to keep them out. As every experienced beekeeper knows, they have a habit of making their nests in the bottom chamber of a two-story hive when the bees are clustered above, destroying enough comb to make a place for their nests.

We found that by placing red-stained poison on the bottom board, covering it with a cover and putting these around the yards, we could reduce the mouse population very substantially in a yard. I have found as many as four dead mice near one of these plantings of bait.

Bee supply manufacturers should be careful to see that entrance reducers are cut so that mice cannot get through them. At least one manufacturer that we bought reducers from had them cut so that small mice could get in. These proved very costly to us.

Why I Got Tired

By E. L. Sechrist, Fort Bragg, California

Once upon a time I thought I was doing pretty big business when I took off a ton of honey in a day, extracted, and strained it, and put it into 60-pound cans, returned the empty supers to the hives, and melted the cappings so that I had a good cake of wax and everything clear for the next day's work. (I did not quit at sundown.) Of course, I did not have everything as convenient as I should, for I did not have a steam-heated knife nor did I have a honey pump.

But why should I be so tired after extracting a ton of honey? A ton wasn't a lot to lift! Only a ton?

Then it struck me that I handled the honey and supers more than once from the time they came off until the supers were back on the hives and the honey in the cans.

Then I began to count — steps, liftings.

(1) Take the honey off the hive, using brush or bee escape. (2) Put it in the wheelbarrow. (3) Wheel it to the honey house. (4) Lift it off the wheelbarrow, open the door and carry into the house. (5) Carry it to the pile in the corner. (6) Carry from the pile to the place of uncapping. (7) Lift each comb to the uncapping stand. (8) Uncap each comb. (9) Put each comb into frame rack. (10) Put each comb into extractor. (11) Turn the extractor by hand. (12) Lift out combs and put them in supers. (13) Carry supers to stack. (14) Run honey from extractor to bucket. (15) Lift bucket shoulder high to strainer. (16) Run honey into 5-gallon cans. (17) Carry can to pile. (18) Lift it to the pile. (19) Wheel cans to wagon. (20) Lift it to the wagon. (21) Melt cappings. (22) Handle wax. (23) Carry empty supers to wheelbarrow. (24) Wheel load into the apiary. (25) Put supers on the hives.

Twenty-five handlings, not counting removing and replacing covers, handling combs not ready to remove, besides a lot of other movings and liftings due to errors or forgettings.

All this, I figured, would come to the lifting of more than ten tons in producing a ton of honey. Maybe there was reason for me to feel tired at the end of the day! Anyway, it induced some thought and I began to watch my step and reduce the excessive handlings of honey which I had grown into without thinking about it.

One learns a lot of things when he begins to count his steps and to watch every motion. He rearranges his honey house and makes his doors with ramps so he can roll a load of supers right into the house on the wheelbarrow; he arranges a

treadle so that he can open the door without dropping his wheelbarrow and taking up his load again.

But it is useless to recount all the savings that can be made. Each one in his own apiary will soon work out short cuts if he once begins to think about the labor he is using.

When studying "management" for Uncle Sam in the apiaries of "good" bee men, I used to stand, watch in hand, and time the work each man did in his own way. How long did it take, how many **lifts** did he make from the time he took his honey into the house until it was in the can? Then translate time and labor into the cost of the honey! One might have two to five times the cost his neighbor had—and his honey sold for the same price! Who made the profit? It was the thinking man who had reduced his work and his operations to the minimum. Go thou and do likewise!

Honey in a Reducing Diet

By H. H. Root

In these days when women who are not slender but who foolishly want to be, the question is asked over and over, "Is honey fattening?" Along with a heavy meal of starches, if honey is eaten in addition, it is fattening just as any sugar is fattening. However, if it is used even liberally with a moderate meal of lean meat and vegetables, especially green vegetables such as onions, cabbage, carrots, lettuce, spinach, etc., honey is not only not fattening but it actually assists in bringing about a reduction in weight and it is a delightful way to reduce, too.

There are many reducing diets available. There are hundreds of schemes, nostrums, and medicines. Some of the latter are supposed to destroy the appetite. Some of them may be all right, but I suspect that many of them are harmful. In any event, they do not interest me, but let me tell my story:

In my younger days I got enough exercise, ordinarily, to keep my weight down but after a time I became fat and 40. I was fatter at 50 and still fatter at 60, and finally, when I weighed 205, I decided that my old excuse that my mother's brothers were all stockily built need not apply to me. On three occasions I have reduced. In between I usually build up a little but I never go up as much as I go down. Today I weigh 172 pounds and I shall not stop until I reach 165. Usually at the start I take off about two pounds a week, then toward the end one pound a week. It is so pleasant and easy that I actually look forward to it.

What has all this got to do with bees and beekeeping? It has plenty to do with it, and here is why. All my life I have eaten honey at practically every meal. When reducing I eat a little more than usual. I like buttermilk so I drink a little more buttermilk—at least one large glass every meal. I also eat more apples than usual, and if I happen to feel like it before I retire at night I eat an apple or two then. Starches, so far as possible, I keep away from, with the exception of a dry cereal for breakfast and then I select raisin bran. I like it and the amount of starch is very small. Butter and oleo I avoid altogether, substituting honey. It tastes better and is better for me. I eat no bread except whole wheat, and then I toast it. Once or twice a week I have a small portion of lean meat. I like cabbage, both cooked and raw, and I eat all I want of it as well as celery, carrots, lettuce, spinach, and any other vegetable of that type. Honey is an energy food and I do not want or need a large amount of other foods.

Avoiding starches is not enough. The meals must be moderate, not heavy. I do not count calories for that is a lot of bother. I get on the scales every morning and in that way I watch the needle slowly go down. The best way I have found for holding to the diet is to tell a few of my friends what I am doing. Right now I am announcing that I shall weigh 165 pounds on December 31st, so that I can start the new year streamlined, if not young and handsome. Some doubting Thomases predict that I won't make it. Starting at 180 pounds on October 15th, I have already lost eight

pounds in four weeks, and in the six remaining weeks I'm sure I'll lose eight more.

It is foolish to believe that all can reduce by the same method, but regardless of the plan followed, I firmly believe that honey helps in that a little satisfies. Some find it an advantage to take a spoonful of honey an hour before each meal.

Later: I reached 167 on December 15 and the doctor told me to go no further.

U. S. Department of Agriculture to Continue Honey Assistance

The U. S. Department of Agriculture announced today that the current program to encourage both new domestic uses and the exportation of honey will be continued after December 31, 1950:

Payments of not more than 4.5 cents per pound will continue to be made to packers who sell honey into diversion outlets at the market price less the amount of payment. The diversion outlet must be approved by the Department and honey must be employed in the outlet before payment can be claimed. Payments will be made to exporters of honey at the rate of 4.5 cents per pound or 50 percent of the f.a.s. sales price or of the domestic market price, whichever is lowest.

Diversion outlets for which payments will be approved will be "new use" outlets. These will include products in which no honey has been used since January 1, 1948, or those products for which manufacturers develop new formulas entailing the increased use of honey.

Approximately 10.5 million pounds of honey have been moved under this program, principally to export, during the period May 9 through November 30, 1950.

The whole export part of the program is designed to assist private traders to sell honey to destinations outside North, Central, and South America. Honeys of certain flavors have customarily found more ready acceptance in the European market than in the domestic.

Details of the program, including application forms, are available from Harold J. Clay, U. S. Department of Agriculture, Fruit and Vegetable Branch, Washington 25, D. C.; R. M. Walker, 333-335 Fell St., San Francisco 2, California; or Chester A. Halnan, Room 620, 90 Church St., New York 7, N. Y.—U. S. Dept. of Agr., Production and Marketing Adm., Washington, D. C., December 22, 1950.

Heather Honey is Wonderful

By H. H. Root

Dr. J. N. Tennent, Convener of the Library Committee of the Scottish Beekeepers' Association, who paid Gleanings a visit last summer (page 541, September Gleanings) sent us some heather honey for Christmas. The honey was granulated and the package was hexagonal in shape, of waxed cardboard, attractively printed in the purple and green of the heather flowers and leaves. It was packed by David Emslie of Elgin. The honey has a very fine, smooth grain, of a texture that fairly melts in the mouth, and the aroma is wonderful. It is not strange that heather honey is in such demand in many parts of Europe. It is so thick that it can be extracted only with difficulty, if at all. It is not light in color—in fact, it is well on the amber order —but one forgets all about the color after getting the taste.

The thanks of Gleanings to Dr. Tennent, and hearty congratulations to David Emslie.

When Harry Lauder sang about "the purple, purple heather", perhaps he was thinking too of the golden, golden honey!

A Talk to Beginners

M. J. Deyell

[For this talk we are taking material from a leaflet we have used for some time. —Ed.]

The House the Bees Live In

A colony of bees is a little city in itself. It has regular streets and alleys for the passage of its inmates and those streets are kept clean. In some respects it is like the human kind but in another way it is organized on a different scheme that has for its goal the survival of the fittest irrespective of ethical or moral rights.

The house (the bee city) the bees live in is air cooled, or more exactly "air conditioned" in hot weather. The temperature inside is always the same, no matter how oppressively hot it is outside. It is thought that for thousands of years bees have known and used the science of ventilation and air conditioning. The wise man has said, "Thou sluggard, go to the ant." If he had said, "Go to the bees", he would have been wiser.

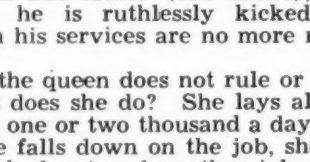
In the bee city there is no mayor or city manager, no city council, no political boss, and while there is a queen she does not direct its policies nor its destinies. Nevertheless, in all the realm of nature there is not a more efficient organization. Its police force is the best in the world — not for regulating the inmates of the city, but to keep out the burglars, the thugs, and the racketeers. Let one of these approach the gates of the city and, be it the naughty boy or one of its own kind, he or she will be so severely treated that they will retreat in utter rout.

The inmates are all for one and one for all. There is perfect cooperation and unity of action. There are no jealousies, no strifes for political preferment, no unions, and no strikes. They cooperate and do not fight among themselves. They are intensely patriotic, and if need be will fight their enemies. Their prowess is not questioned by any living thing that creeps, walks, or flies. Even man has a most wholesome respect for them. Man must deal with them if at all on their terms.

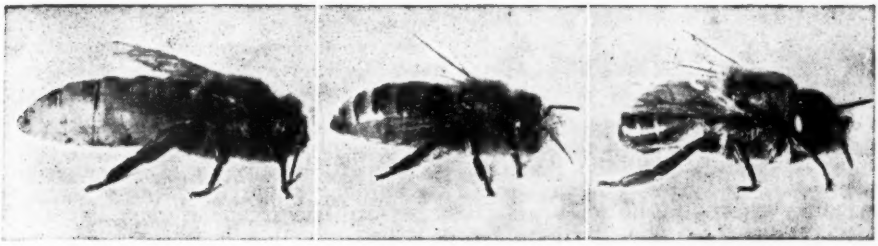
Their scheme for the division of labor is the best in the world. Every worker knows her precise job and does it without being told or shown by a superior, for there is no superior.

In this bee city there is no unemployment problem. Nor is there any unemployment or old-age pension. None is needed. The population of this bee city is regulated to the seasons and the amount of work to be done. This, of course, means a perfect scheme of birth control. When depression or a bad season comes, the bee city stops raising more babies. When there is danger of the city starving, the control bees will dump the half-grown babies (bees in the larval form) out at the city gate to die. If any of the full-grown youngsters are crippled, sick, or not fully developed, they too are shoved out of the city to die. In addition to this, the old workers whose wings are worn out by toil are made to leave the city. If they do not go out voluntarily they are kicked out. What is the use, they say, of raising a lot of babies or cripples and keeping a lot of old folks that can't work any more? To feed the unborn and those that can't work might mean that all would starve. Every one works but father (the drone), and even he is ruthlessly kicked out when his services are no more needed.

If the queen does not rule or boss, what does she do? She lays all the eggs, one or two thousand a day, and if she falls down on the job, she too is kicked out and another takes her place. The slogan is efficiency. If



The seven stages of the the development of an egg into a honey bee. After the egg is laid the cell is capped over. The larva grows and at the end of 21 days the worker bee will cut its way out of its cell. The drone takes 24 days and a queen needs only 15 days.



Queen Worker Drone

you don't work or can't keep up your end of the job in that bee city you shall not eat and so the halt, lame, and inefficient must die that others may live, and so the slaughter of innocents goes on. This, in short, is the political economy of the bee city. In some respects it may be emulated by man. In others, it is too cruel and heartless. Man wouldn't stand for it, but he will receive a dole even though in many cases he is able to work.

Interesting Facts About Bees

There are from 30,000 to 75,000 inmates in the bee city known as a colony.

The Queen

Normally there is but one queen bee in a colony or city.

As a rule, two queens do not get along peaceably in the same city at the same time. One usually kills the other.

Queen mother and queen daughter, however, may live peaceably together for some weeks, but mother-in-law and daughter-in-law, never.

When two queen bees start fighting they not only try to sting each other, but they pull each other's hair in real woman fashion. The queen stings only a rival queen.

A queen bee can lay her own weight of eggs in one day, She will lay, in the first two months in the spring, from 300 to 1000 eggs in a day, and in the next month, or just before the main honey flow, she may lay 2000 eggs a day. She can be the mother of 100,000 workers (undeveloped females) in one bee hive. If the old bees did not die off at the age of a month or six weeks in the height of the honey flow she might have twice that number.

The same egg that will produce a queen will produce a worker bee in 21 days. The larva of the worker bee is fed a coarser food by the nurse bees in the hive and for that reason it is not developed into a perfect female like the queen and not so quickly. In this way the bees can of their own will produce either a queen bee or a worker bee from one and the same egg.

The Workers

The life of a worker bee in the northern states, where winters are cold, may be six or eight months, extending over the less active season of the year — fall, winter, and early spring. But a worker bee hatched just at the honey-gathering season in summer is likely to wear out its wings and live only a few weeks in the intense work of filling the hive with honey. It often falls exhausted outside the hive and there dies. If it does not leave the hive the younger bees push it out of the hive as of no further use. If the old bees attempt to go back, the young ones, without gratitude or conscience, pick them up, carry them on the wing perhaps a half-mile, and then drop them. They can't walk back. They can't fly back, and so they die.

The bees that gather the surplus crop of honey do not eat it. The bees that eat it did not gather it because the generations change so rapidly. But the colony lives on.

The Drone

A drone, which is a male bee, has no father but, strange to say, he always has a grandfather (a maternal grandfather). The queen bee lays an unfertilized egg to produce a drone — a clear case of parthenogenesis, or virgin birth.

The drone bee is not permitted by the worker bees ever to live more than one summer season. He dies after mating with the queen, or is driven out of the city or killed by the worker bees at the close of the honey-gathering season to save boarding him. He is a happy loaf-

(Continued on page 123)

Editorials

Beeswax Production Because of the sharp advance in the price of beeswax a greater effort will doubtless be made to increase the production of wax during the coming year. In the past, when wax was not bringing as high a price as at present, it is safe to say that many pounds, perhaps tons, of wax were wasted in the course of the year, mainly because beekeepers failed to salvage every bit of this valuable product.

Whether or not the production of beeswax could be increased to any appreciable extent without reducing the amount of surplus honey is questionable. Experimental work should be done along this line. In any event, we should save every bit of wax possible during the coming season.

* * * * *

Canadian Honey Marketing Program Judging from progress made in Canada recently in the marketing of honey, it would appear that we in this country could well profit from what has been done there.

In order to raise money for advertising honey, Canadian beekeepers through their Beekeepers' Council, which in Canada is comparable to our National Federation, entered into an arrangement with container manufacturers whereby they would collect a levy of one-fifth cent per pound on all containers furnished. This money was turned over to the Canadian Beekeepers' Council for honey advertising purposes. The national honey-selling campaign not only sold the current crop but also a rather heavy carry-over from a previous year.

The Department of Agriculture in Canada purchased some 3 million pounds of honey to prevent a temporary glut on the honey market. At present the 1948 and 1949 honey has been moved to the market, and the 1950 crop is being sold in orderly fashion.

It would appear that a similar method of raising funds for honey advertising might be initiated in this country unless there is some law to prevent it. Such a plan automatically insures a continuous income for advertising purposes.

Our American Honey Institute, which has been in business for over 20 years, is doing a splendid piece of work in popularizing honey and thereby increasing consumer interest in our product. The Institute is operating on a limited budget which is maintained solely from voluntary contributions. The scope of the work of the Institute could be enlarged materially if ample funds for carrying out a program for honey publicity, advertising, and research were available continuously.

Let us give our American Honey Institute the financial and moral support it so rightly deserves.

* * * * *

Possible Labor Shortage for Commercial Beekeepers During the last World War it was difficult for commercial beekeepers to carry on in normal fashion owing to the lack of help in the apiaries. In some instances women helped in apiary work and men beyond the age of strenuous physical labor were called upon to do what they could in the bee yards.

Since the age limit for draftees is within the 19 to 25-year limit, it would appear that there may be fewer deferments for agriculture than in the past war.

We know of some commercial beekeepers who are now unable to do strenuous physical labor and are depending on their sons to carry on. These boys have to appear before the Draft Board, and if taken into the service the fathers may have to dispose of some of their bees. This naturally works a hardship on the beekeeping industry which is so essential to agriculture at present. It is going to be increasingly necessary during the coming season to cut labor costs drastically.

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Bees on Wheels It has been said that approximately 75 percent of the bees in the state of California are on wheels because it seems necessary there to

practice migratory beekeeping. Some apiaries have to be moved twice or three times during a season. By the close of the season the bees are usually moved back to where they were early in the spring. When conditions are favorable for nectar secretion, migratory beekeeping may be profitable but if beekeepers who move bees fail to secure surplus honey, their operating costs mount and consequently they lose money. However, on large-scale migratory beekeeping, where apiaries are moved to different sections of the country periodically, some yards may show a profit and others a loss, depending on conditions affecting nectar secretion.

Those who practice migratory beekeeping should keep in mind the fact that it is necessary to secure enough extra honey from the bees moved to more than pay for the extra labor and overhead expenses involved in moving. We note from an article in the December 9, 1950, issue of The British Bee Journal that Australian beekeepers sometimes move a distance of 2000 miles in order to take advantage of good bee pasture. According to this report, an average yield of 250 pounds per colony or over is not uncommon in that country. The main nectar-producing flora are different varieties of eucalyptus which yield nectar over a considerable period of time when weather is favorable.

All of this may sound alluring to beekeepers in this country but Australian beekeepers have their problems with pests and diseases. Ants attack bees at hive entrances, and large toads up to eight inches in length eat as many as 300 bees at one meal. It seems that there is always some fly in the ointment to take the joy out of beekeeping.

* * * * *

A New Use for Guinea Hens Someone has said that there is nothing new under the sun or words to that effect. Perhaps so, but just recently we had a letter from a beekeeper who had been having trouble with people molesting his apiary near his dwelling house at night. Ordinarily, a dog will start barking when anyone comes near at night. But dogs have to get some sleep and some dogs are sounder sleepers than others. The beekeeper who wrote said that he conceived the idea of getting some guinea hens. It seems that these birds are very alert or susceptible to all noises and will start talking loudly when any strange noises occur. Perhaps guineas don't need much sleep.

Anyway, since the beekeeper got the guinea hens he has not been troubled with pilfering at night. The pilferers would have to get rid of the guinea hens and that would be easier said than done.

* * * * *

Wintered-Over Colonies vs. Package Bees for Orchard Pollination From the December, 1950, Apicultural Abstracts of The Bee World, it is noted that tests were made from 1932 to 1937 at the Central Experimental Farm at Ottawa, Canada, to determine the comparative values of wintered-over colonies and package bees for orchard pollination.

The packages were 2-pound, 3-pound, and 5-pound sizes with queens. Bees coming from the fields were trapped while fruit was in bloom and the number of bees and pollen gatherers recorded. Ten counts were made on each hive each year.

Records show that wintered-over colonies of normal strength had a larger number of field bees and pollen gatherers at work than did any of the packages. The wintered-over colonies are therefore preferable for pollination.

However, if packages are used—the bigger the better. Some southern bee shippers now list the 4 and 5 pound sizes which may be called orchard packages.

Such a package is usually supplied with a 5-pound friction-top pail of syrup which may be replenished if necessary when received. The package is then wrapped in building paper. An auger hole is bored in one end of the shipping cage for a flight hole, then the cage of bees is placed in the orchard.

This procedure does not necessitate the use of a hive and is intended for those who want bees only for pollination and not for honey production.

* * * * *

Stocks and Colonies At times these terms may have been used synonymously although the term stock is seldom used in this country.

An interesting article "Some Bee-

keeping Terms Historically Considered", by David Bone, appears in the October 1950 number of Bee Craft, published in Kent, England.

According to the author, stock originally denoted the bees and the hive together, before the days of movable-frame hives. The adoption of the movable-frame hive has altered the old meaning of the word stock somewhat, although most beekeepers in Great Britain nowadays consider the term as meaning a family of bees on movable combs and do not include the hive.

The term colony also meant bees and hive. However, the word had a special meaning in that it denoted a divisible hive as distinct from a one-piece hive such as a skep. Colonies were usually made of wood and kept in a bee house for protection from the elements. The term also meant a hive, open top and bottom, that could be tiered up the same as the Langstroth or National hives—sometimes four high. A box hive that could not be built up or added to was not a colony but a hive.

It would seem that in the interest of beginners and experienced beekeepers alike there should be a general clarification of the terminology in beekeeping literature.

* * * * *

Beekeepers' Associations Backbone of Our Industry

We have made this statement a number of times editorially but it needs to be reemphasized.

At the recent Harrisburg winter meeting of the Pennsylvania State Beekeepers' Association part of one session was devoted to a panel discussion on ways and means of building up and maintaining an active county association. This was by A. R. Dean, Secretary of the Allegheny County Beekeepers' Association.

Here are a few suggestions that came out of the discussion and most of these have actually been tried out:

1. Enlist the help of young beekeepers. Youth is needed for action.
2. Serve refreshments at meetings.
3. Show personal interest in the problems of individual beekeepers.
4. Make beekeepers think they will actually get something in return for joining.
5. Cooperate with county agricultural agent and extension man and have them present at meetings if possible.
6. Offer to provide speakers for service clubs, garden clubs, etc.
7. Encourage displays of beekeeping gadgets and offer prizes for the best.
8. Obtain movie films or slides for use at meetings.

The Lackawanna County Beekeepers' Association staged a bee hunt recently and elicited the interest of newspaper men and photographers who were on hand during the hunt for a bee tree, which was found, the tree cut down, the section containing bees and honey opened, and the delicious honey sampled by most of the people who followed through on the project.

Needless to say, many people were made wiser about honey bees and honey. In fact, most of the people who tasted the honey had some of it dribbled down the fronts of their clothing, and interestingly enough, no one was stung.

There is no human yardstick that will measure the amount of good accomplished, not only for this county association but also the entire community which definitely becomes more bee and honey minded.

Imagine what might be accomplished for our industry if such a project were duplicated in other counties in every state.

* * * * *

Honey and Bee Displays

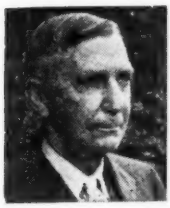
Displays of honey, bees, and equipment in connection with fall fairs and winter food shows help to call to the attention of thousands of passersby the importance of bees and the value of honey as a food.

It is essential that an attendant in charge of such a display be able to answer intelligently the one hundred and one questions asked. It is an advantage, too, to have appropriate printed matter on bees and honey to hand out to interested people.

The Vermont beekeepers are to be congratulated on the fine display of honey, bees, and beekeeping equipment displayed recently (see page 46). Without a doubt the efforts put forth will result in an increased consumer interest in honey as well as some beginner beekeepers. We need more such displays in other states.

From North, East, West, and South

SOUTHERN CALIFORNIA, Jan. 5



Weather: We have just returned from a trip which took us 400 miles north of where we live and into the Central California valleys. The difference in the rainfall and the effect it has on the growth of grass and shrubs is very noticeable. In the central sections the rainfall has been two or three times that of the normal, while here in the southern part of the state it is much below the normal precipitation. Of course there is yet time for plenty of rain but we are never sure until we really have it.

Grass is from two to six inches high along the roadside in the northern sections while here in the southland the grass which had a good start in November is slowly dying for the lack of moisture. While the main attraction of our trip north was a visit to our new grandson, still we could observe the beautiful things by the side of the road.

Market: The honey market was rather slow during December. Some beekeepers who wanted to sell found a somewhat dull market. Prices were inclined to be a trifle lower. Perhaps the holiday season caused a slight depression. Beeswax prices were good with a steady demand and beekeepers received from 45 to 50 cents per pound.

Condition of Plants: All plants need a wet winter to offset the effects of the several dry years. Rain in good quantities is necessary if plants are to produce well next spring and summer.

Condition of Bees: Many bees are in good condition but others only fair, particularly in regard to honey stores. The eucalyptus is beginning to bloom in some places and a few bees are being moved to those locations for a hoped for fill-up.

Miscellaneous: With the dry conditions existing at present in Southern California, beekeepers are wishing that some of the rain from Northern and Central California would come down this way. In Central California where the rains were so heavy some beekeepers lost part of their bees because of the floods. In Southern California the drouth may cause the loss of bees. Too bad there can't be a happy medium and the moisture divided up a little. —L. L. Andrews, Corona, California.

NORTHERN CALIFORNIA, Jan. 1

Weather: Northern California has had the wettest December in 75 years. Rains started in November and continued intermittently through December. Warm rains in the mountains melted all the snow and this extra runoff, coupled with heavy rains in the valleys, created disastrous floods. Hundreds of thousands of acres were flooded, thousands of families made homeless, roads, railroads, and many bridges were washed out, and millions of dollars of damage done by the rampaging rivers and their tributaries. The soil is soaked to a record depth and the underground supply of water has been increased in many areas.

All of the fields are green, even some mustard bloom is in evidence because we have had no frosts to this date in this vicinity. This lack of cold is getting to be serious for the fruit grower because the trees have not had the desired resting period and many fruit buds will drop as a result and others will be injured by later frosts which are sure to come. Many colonies of bees were lost in the flood waters and many hives floated away in the current. One beekeeper is said to have picked up a truck load of hives as they floated down to a bridge. The mountain tops are being covered again with snow and since this is one of the main sources of irrigation and power, let us hope that weather conditions will be more favorable through January and February. So far we have had six inches of rain above the normal average.

Market: Much of the 1950 honey crop has been sold by the beekeeper

although several are still holding for better prices. The wholesale price of 9, 10, and 11 cents is too low considering the advanced living costs and the advance in the price of everything the beekeeper has to buy.

Beeswax has come into increased demand but is still out of line with the price of low grade honey. When the price of beeswax reaches the 56 to 60 cent level for the apiary run grade, more beekeepers will be able to convert their off-grade honey into beeswax or will use methods which will produce more beeswax per 60-pound tin of honey. If a colony uses eight pounds of honey to produce a pound of wax, there would be little incentive for the beekeeper to feed even 7-cent honey for the wax the bees would produce. The labor involved in feeding, in extracting the honey, and in rendering the combs would be too great to make the venture profitable. If combs are spaced farther apart, using only 8 frames in a 10-frame super, and are cut deeply at extracting time, the amount of honey used in producing the extra amount of beeswax would be compensated for by the saving in labor in extracting only eight instead of nine combs per super. The amount of wax produced by the bees to lengthen the cells of eight combs would be greater than that needed to seal the surfaces of the ninth comb when nine instead of eight combs are used. Bees would consume more honey and produce more wax if they had to construct all of the combs, with or without the aid of comb foundation. If war comes again it will be necessary for the beekeeper to consider these and similar problems in order to increase the production of beeswax to meet the needs. If the beekeeping industry does not produce all of the beeswax needed, other materials will be used as substitutes and will tend to lower the price of pure beeswax.

Honey prices have not been advanced in our local markets with the advance of other food products. If prices are frozen to what they were in pre-Korean days, the price of honey to the producer will also be fixed at the same period level. The present low prices of honey on some of our markets are due to keen competition between the packers and their ability to secure from the producer sufficient honey to sell at the present low prices. We have several samples of honey put out by the school lunch program which the children will not eat and after seeing it and sampling it, I must say that I do not blame them. Such practices certainly are not creating more honey customers.

The California State Beekeepers' Association at its annual convention in San Diego in December voted in favor of a honey-marketing program under the supervision of the Director of the State Department of Agriculture. With both beekeepers and production scattered over the entire state, it will take some time to get the necessary signatures and to hold the hearings as specified by law. Once it is put into operation, both the producer and the packer will be represented on the control board and all producers and packers will be covered by its provisions. It will be a self-aid program designed to improve the marketing of honey through research, advertising, and sales practices.

Mrs. H. J. Crawford and Mrs. W. C. Miles were active members of the Ladies' Auxiliary of the California State Beekeepers' Association this past year in promoting honey at fairs, local organizations, and the 4-H Clubs. They believe that the industry can increase the use of honey by making proper contacts with youth organizations.

Legume Seed Production: The use of bees in producing legume seed reached a new high in California last year. Unfortunately, early rains ruined some of the seed crops in portions of the state but prospects continue to look good for seed production this year. Seed yields were very favorable and growers are interested in making contacts with beekeepers for the coming season. A majority of the beekeepers have found that it is seldom possible to operate colonies for both maximum seed production and for honey. When three or four colonies of bees per acre are used for pollination purposes, the beekeeper has to receive an adequate rental and be protected against loss of colonies by the improper use of insecticides. — J. E. Eckert, University of California, College of Agriculture, Agricultural Experiment Station, Davis.

TEXAS, January 4

Weather: The temperatures for December were about normal. Drouth which has persisted since early summer continues to be the critical weather factor throughout Texas. Only light rain fell in a few counties in the mid-coastal prairie region. In our immediate area rainfall during the past six months was about one-third of the normal amount. Some areas report the present drouth the most prolonged in 33 years.

Bees and Plants: Bees have been relatively inactive except for some afternoon flight. With this condition and the winter broodless period, consumption of winter stores has been light so far. Colonies are mostly in fairly good condition although in some localities they are light and will require feeding. Seedlings of spring flowers have not yet appeared and there is little promise of a spring source of nectar and pollen except what may come from blooms of shrubs and trees. Normally brood rearing should begin within a few weeks. However, this no doubt will be delayed this year. To what extent shrubs and trees will provide spring bloom remains to be seen. Most beekeepers expect to feed pollen substitute for some time until wild flowers appear after the return of normal rainfall. Little can now be said of the prospects of such major honey plants as clover and vetch. Considerable acreage of vetch has been seeded during the fall but has not yet emerged. Volunteer vetch has deteriorated badly. The same condition is true of sweet clover in the southern half of Texas where fall seeding is practiced. In North Texas sweet clover is seeded in late winter. Normally fall seeded legumes are ready for grazing at this time. To what extent delayed germination will result in normal stand and spring growth and bloom remains to be seen. In general, there is little promise of normal bloom during the coming months. It should be remembered, however, that with return of normal rainfall our native plants, at least, are capable of remarkable come-back in a relatively short time.

Market: Honey continues to move well in the retail market and prices remain steady. Packers are moving honey at a steady rate to the grocer trade. Stocks on hand with authorized buyers under the government price support program are moving in large volume to distribution centers. From present indication the record crop of 1950 will be disposed of by the time the new honey crop is harvested.

Miscellaneous: Movement of apiaries to the Lower Rio Grande Valley so far has been less than usual indicating that bee operations will be far below the average of recent years. Some frost injury of citrus trees is reported, but the spring bloom is not expected to be seriously affected. Bees are desired also for the pollination of cucumbers, melons, and lima beans which are grown extensively in the Valley. There is, as yet, little indication of the demand for package bees but queens are expected to be in good demand. Quite a number of producers plan to expand by buying apiaries from beekeepers going out of business. So far relatively few colonies are operated in the alfalfa district of Northwest Texas but farmers and local beekeepers plan to expand beekeeping operations in that area. During the past month Dr. E. F. Phillips, formerly of Cornell University, visited old acquaintances at several points in Texas. Older Texas beekeepers better remember Dr. Phillips during earlier years when he headed Bee Culture Investigations, Bureau of Entomology, U. S. Department of Agriculture, and will remember particularly when he and his staff conducted a beekeepers' short course at San Antonio during World War I.—A. H. Alex, College Station, Texas.

COLORADO, December 31

Weather and Crop: Looking back over 1950 it seems to have been a year of misplaced extremes. For example, it frosted here at Meeker 19 nights in June. That would be all right for April. Where some of our yards are situated it did not

miss a single month without a freeze. The resulting crop showed the effect of the season, being about as poor as we have ever had here on the White River—just over 100 pounds. We fed, and fed, and fed. We fed at first to produce bees rather than to prevent starvation, but finally found ourselves with large colonies of bees and then we **were** feeding to prevent starvation. It seems to have paid, for many beekeepers in similar locations report a crop of less than 50 pounds average. Conversely, the lower altitudes had one of the best flows in years, and crops of nearly three cans per colony are reported. Most of this was made from second cutting alfalfa and white sweet clover.

The condition of drouth reported in October still prevails. Some rain and snow fell in November, but not nearly enough to restore the soil to normal. All the fall months including December have been as mild as last spring was cold. The days have been warm and sunny. Conditions were ideal for building our new home here in Meeker, but this is supposed to be a report on beekeeping conditions. My guess would be that our chances for a good crop next summer have been hurt by the mild weather this fall and the long drouth. Beekeeping is an unpredictable sport. It takes more imagination all the time to term it as a means of livelihood and those of us who like to play the game will go right ahead and make plans for another season — and who knows, maybe we'll make a good crop in spite of these early predictions.

Pollination: We continue to hear about pollination. At all four of the state meetings I attended recently — in Colorado, in Nebraska last year, and this year in Iowa, it was a major topic of discussion. We not only hear about it from beekeepers but farmers approach us. County agents and P.M.A. men discuss it at every opportunity, for we do need legume seeds. It is a warm issue to say the least. It seems to me that we are being offered a chance to supplement our precarious income from honey production by spending a part of our energies in pollination. Somehow I do not have too much enthusiasm for it. In the first place, I do not like to move bees. Secondly, the kind of colonies we have at the beginning of the alfalfa and clover bloom—usually four or five stories high and weighing well over 100 pounds—do not lend themselves to moving, either. I guess we could split them and make two good pollinating colonies, but until the deal becomes more standardized I'd rather leave them strong and tall and try to make some honey.

In something as new as intensive pollination for pay there are bound to be many new ideas projected. All kinds of plans are proposed for getting a rental for the use of our bees. Farmers are rare who are willing to pay the $10 or $12 it costs to maintain and operate a full-strength colony for a year. So the "share-the-seed" plan is most popular. But even then it is hard to overcome the age-old idea that what comes from a bee hive should be free. This thought prevails in many minds and it will take time to overcome it. Let us not be so eager to get into this new thing that we set up standards that cannot possibly pay in the long run. If pollination is going to be successful for both parties it must be done on an agreed basis, preferably written. And if the beekeeper intends to gamble along with the farmer he must remember that it takes more than just plenty of bees to make a seed crop. Fertility, moisture, pest control, and harvesting are all vital factors. Consequently we must set the stakes high enough so that the good years will take care of those years when he ends the season with no bees fit for winter, no honey, and no seed.—John W. Holzberlein, Jr., Meeker, Colorado.

NEBRASKA, January 2

Weather: So far this fall and winter the weather has been just about right for bees. Several periods of sub-zero weather have been of short duration and in between those periods the weather has warmed up sufficiently to permit flight of bees. Christmas day was balmy enough to permit flight. The only drawback to this fall's weather is the fact that it has been too dry. Clover and wheat both need moisture. However, this condition is not as yet serious. The weather man is try-

ing desperately at this writing to deliver us a blizzard, so by the time this appears in print the drouth may be broken.

Honey Market: While we cannot complain about the honey market, most of the honey producers are disappointed or unhappy about the slow movement of honey. Reports of a number of the big producers indicate that they are desirous of selling out. Prices are firm to a shade lower. Producers, as a rule, are anxious to sell their honey in the fall and this results in a temporary drop.

Condition of Colonies: Condition of colonies should be good. We are confident that it is good because good supplies of fall honey are available and due to good weather bees have been able to move.

Condition of Honey Plants: As has been stated previously clover needs moisture but is still in good condition.

Beeswax Market: Beekeepers are gratified at the advancing price of beeswax.

Miscellaneous: A new era in beekeeping practice is opening up with the increased demand of bees for pollenization purposes. The outcome this year was unsatisfactory because of too much rain.

From personal experience we would advise getting rental fee in advance or at the time bees are moved to the renter's location. This added revenue is indeed a welcome supplement to the beekeeper's income.—Benj. Nielsen, Aurora, Neb.

NORTH DAKOTA, January 10

Weather: There seems to be nothing unusual about the weather. There is a good blanket of snow over most of the state and temperatures are fairly normal for this time of year. Locally it has been down to 27 below zero but hasn't stayed there long. So far as the honey plants and overwintering bees are concerned the low temperatures are of little concern because the snow cover is ample protection for the plants, and beekeepers are well aware of the value of winter protection for their bees. Those who do not, for one reason or another, prepare their bees for winter, make a practice of killing the bees in the fall about the time the last of the brood has emerged from the combs. These hives are stored away for the winter and restocked with package bees the following spring.

Indications are that the colonies are wintering better than for the previous year. There is little, however, to go on as I have few reports on this. In addition to a few scattering reports the better wintering has been reflected to some extent by an observation hive which the North Dakota Agricultural College Entomology Department maintains for the benefit of students and visitors. The colony, although becoming depleted of its bees, is still in fair condition and will probably last well towards the end of this month. In contrast, the observation colony of the previous year dwindled away shortly after the end of December. At best it has usually been found difficult to maintain a colony in an observation hive much past New Year's because of the overactivity of the bees in such an abnormal environment. We have on occasion maintained nuclei throughout the entire wintering period in a bee cellar but they were in an environment more conducive to their survival than that of the observation hive, where colonies are disturbed constantly by light and room temperatures.

Bees for Pollination: There has been a growing interest in bees for pollination of alfalfa of late years and it has been nowhere possible to supply the demand. Last week a farm operator called on me for help in locating bee men who would be interested in supplying enough colonies for his 1000 acres of alfalfa which he will operate for seed production next summer. Other such inquiries are being received but for lesser acreages. The irony of the whole thing is that seed growers are realizing the value of bees for pollination now when the number of hives in the state is at the lowest point it has been since about 1930.

Market: There has been a brisk demand for honey this past season and local supplies are believed to be almost exhausted. Both the quality and the yield was quite satisfactory with the per-hive honey production for the past year averaging 120 pounds.—J. A. Munro, Fargo, N. D.

MICHIGAN, December 31

My last contribution to this department was made last summer from Manitoba. This department editor apparently got sleuths out and tracked me down, as a letter arrived requesting some Michigan notes right smartly.

I first went to Manitoba in 1939 and except for three and a half years during the war stayed there until this fall. One of the most difficult things about coming to Michigan was to leave behind so many very good friends. Both my wife and I felt when we transplanted ourselves that we had become deeply rooted in Manitoba's rich soil.

Many in public service work find their honest efforts treated with such apathy or antagonism by those they serve that their work becomes a dismal chore lacking spark or enthusiasm. In the Manitoba honey industry there is an excellent core of good, friendly, and if need be, aggressive beekeepers. These provided a stimulating contact with the industry. At the time of our departure someone called together an informal gathering of beekeepers to a farewell supper. It was gratifying and heart-warming to see a bigger turnout than has attended the last few conventions. Mr. Garland observed that probably a good way to get a crowd out to the convention would be to have a Provincial Apiarist resign annually. A large silver tray presented by the beekeepers will undoubtedly provide a reminder of the occasion for several generations.

Michigan is still so new to me that I haven't too much right to interpret progress of the industry. To date much time has been spent getting organized and indoctrinated, shaken down, and lined up around the College.

Meetings: I have attended two meetings of the State Association and have gotten to know such stalwarts as Russell Kelty, Oscar Schmidt, Howard Potter, Don Barrett, Elmer Carroll, Len Hubbard, and many others.

The last meeting was held December 13. It was a one-day business meeting, and a two-day educational meeting will be held during Farmers' Week at the College January 31 and February 1. I think the idea of segregating these two meetings is very good.

Much worth while business was dealt with and a discussion of the No. 1 problem, "marketing", was sparked by A. Tennenhouse. The chief argument dealt with ways and means of increasing and giving greater stability to the price of honey.

The success of price stabilizing schemes I believe are intricately tied up with the ability of the industry to move all it produces to some type of consumption. It is a well proved economic fact that if 100 units of a product are produced annually and 99 consumed annually, before very long the price will go to pieces. Also a legalized stable price will increase production and under some circumstances reduce consumption, thus tending to aggravate the fundamental economic pressures. The conclusion, if any, must be that consumer demand sufficient to absorb all the product must be created in order to maintain the price.

To date, and I was just reading of similar woes in the Bee-Keepers' Review of 1895, we have made very little progress in bringing about stability of income from honey production or the production of most farm crops. Cycles have been a consistent phenomenom through all recorded history in prices, production, and the biological world in general. Cycles in honey production and prices are so involved in national and world social and economic activities that the beekeeper has generally been influenced most by factors entirely outside his own control such as war, immigration, farm practice, etc.

Progress or even experiment toward stability of income to beekeepers on a national scale can only be attained through the organizations such as the Federation, the Institute, and the State Association. There is one thing certain—stability will never be attained as a finished product on a perpetual basis. In this changing cyclic world it will always be a matter of meeting continually changing conditions with new solutions. The best contribution most beekeepers can make toward a more stable industry is to

turn out a good product and to join and support their organizations.

Mr. Kelty brought up an interesting point in stating that in his opinion many beekeepers were over-expanded. He felt that it was safest and in the long run most satisfactory never to get many more colonies than you can handle yourself in a pinch. When you rely on hired help you are more vulnerable to failure. The one-man unit apparently had the capacity during good periods to lay aside some profits on which to coast through the period of low prices. In other words, freedom from labor costs gives greater flexibility to balance out the peaks and depressions of income.—E. C. Martin, Department of Entomology, Michigan State College, East Lansing, Michigan.

MAINE, January 8

Weather: During the months of September and October it was very dry with little rain in this area, but November made up for the past three seasons with some rain to spare, giving the state the heaviest rainfall for that month in a decade.

With this wet spell of weather we had the tail end of a wind storm which lasted 24 hours, causing a lot of property damage in several ways such as stripped roofs and trees uprooted and falling on buildings. The damage to bee hives was of little consequence, although I had a busy time placing rocks on the tops of the hives so they wouldn't take off.

After this spell of unusual weather we have had a good seasonable stretch of winter weather. A little snow has come—about six inches—and the most of that has left us with a January thaw. Thus far, there has been no need to wish that you were in the southland, for as we say in Maine, "If you don't like this weather, just wait a minute."

Market: The honey market is moderately active with prices firm. Most of the honey crop is sold during the tourist season, thus having a tendency to cause a small backlog.

Condition of Bees: As fall weather was mild and killing frosts were slow in arriving, bees had a chance to gather nectar that could be used as food the first part of the winter. This prolongs their stores gathered earlier in the season. Strong colonies as usual had plenty of stores for wintering, but those of medium strength had stores in proportion and had to be united or destroyed.

Thus far bees have had several flights. This goes a long way toward successful wintering.

Miscellaneous: I wonder sometimes where that spare time is that one used to have to go ice fishing or do a little rabbit hunting in our younger days. If you are lucky enough to get that break nowadays, you have to work overtime at your regular work or let something go that should be attended to. This is the time of year when the average beekeeper looks forward to repairing equipment and making plans for the spring season. I always enjoy our stormy weather, for that is the time I do a large part of my repairing.

This writer hopes that 1951 will be one of the best years for the state and county associations and that they will continue as usual for the benefit of Maine beekeepers.

The annual program of the Maine State Association of Beekeepers will be held at the University of Maine in Orono during Farm and Home Week on April 5. I hope to see you there. — Edward M. Wills, Kents Hill, Maine.

ONTARIO, January 10

Miscellaneous: A few days ago I was talking to our District Representative — in the states I believe you call him the County Agent — and he expressed the opinion that changes in our agricultural practices are due, and must receive attention in the years immediately ahead, if we are to produce food in quantities sufficient to feed the people of North America and have a surplus to export to needy countries throughout the world. Farm mechanization has created problems not extant in the days before the two world wars. More intensive cultivation and increased cropping is posing the threat of depleted fertility, and increased erosion, continuous cutting of woodlots and forests with hitherto insufficient replacement has created intermittent drouth conditions that are becoming

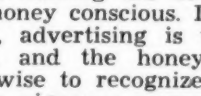
more serious as the years go by. Ground water levels are steadily receding due to insufficient precipitation. I recall attending a soil conservation conference a few years ago addressed by Prof. G. N. Ruhnke, Soils Specialist at Ontario Agricultural College, and he stated that in spite of the introduction of new and better and heavier yielding varieties of grains, our per-acre production was less than that of 40 years ago.

Our District Representative believes that increased acreages must be devoted to hay and permanent pasture. Any such program will naturally center around legumes as providing good forage and for renewal of soil fertility. Alfalfa is of course the most popular, but others are being given trials. Ladino clover has not proved too drouth resistant. Birdsfoot trefoil is being tried on a limited scale but has not been grown for a sufficient length of time on this side of the line to determine its suitability. I mentioned Pellett clover **(trifolium ambiguum)**, and explained its characteristics and its natural habitat and he was very interested and suggested that it might have definite possibilities in any permanent pasture program. Other suggestions included creation of farm ponds and reservoirs for domestic water supply, fire fighting, and possible irrigation of adjoining fields.

Coming back to Pellett clover, I believe beekeepers may find it advantageous to interest farmers in its cultivation, even to the point of supplying small quantities of seed, if available, to good, progressive farmers for trial purposes. Introduced into a locality, it might become permanently established on roadsides and waste places, being perennial. It would seem that unless something unforseen reverses the trend, the old bee pasture crops like alsike and sweet clover are gone, and that beekeepers and farmers will have to cooperate to their mutual advantage.

Weather: To date we have been experiencing a comparatively mild winter. We have had a few cold days of sub-zero weather, but no prolonged cold spells. There have been several snowstorms, but these have been followed by mild weather, with rain which leaves the ground almost bare again. At present about four inches covers the ground and the temperature as I write is around the freezing point. All in all, I would say it has been an ideal winter for bees so far. It has not been cold enough to cause excessive consumption of stores, nor so mild as to start extensive brood rearing, as was the case a year ago. We have not been near the bees since they were packed in early November, so I am unable to say what is their present condition.

The advertising campaign sponsored by the Canadian Beekeepers' Council through the nation-wide levy on containers is getting results. Both radio and press are being used. Advertisements in the big weeklies, such as the Star Weekly of Toronto and the Standard of Montreal, are being inserted in the comic sections in attractive colored displays. These ads are beamed at the children, and aimed at making the coming generation honey conscious. In the war of foods, advertising is the heavy artillery, and the honey industry will be wise to recognize that fact and give vigorous support to any move to induce more people to use more honey.—Allan T. Brown, Peterborough, Ontario.



Know These Facts About Honey

(1) Honey is an energy food for children as well as adults.

(2) Honey helps in the retention of calcium by young infants, and contains minerals which are necessary for the growth and health of the body.

(3) Honey has in limited quantities all the important constituents of the vitamin B complex, vitamin C, some hormones, and amino acid.

(4) Recent research shows that honey contains some biotin and folic acid.

(5) Honey places no tax on the digestive system.

(6) Honey is a safe food since bacteria which cause diseases in human beings cannot grow in it.

(7) Honey is an Appetizing and Economical Food for All Ages and All Income Groups.

American Honey Institute
Madison 3, Wisconsin

American Honey Institute News Notes

By Harriett M. Grace, Director
Commercial State Bank Building
Madison 3, Wisconsin

Hints for Helping Honey

HONEY FOR BREAKFAST WEEK will be celebrated March 25 to April 1 this year. It always begins on Easter Sunday. Someone recently said that it will be 57 years before we have as early an Easter again.

1. Don't start too late in making your preparations for the "Week". A "stitch in time . . ." should be your motto. Besides, most agencies — newspapers, grocery stores, bakeries—make their plans well in advance. So start early to make sure honey is included.

2. Plan on ordering a honey poster for each shop that is featuring honey during HONEY FOR BREAKFAST WEEK.

3. Talk to restaurant proprietors and ask them to feature honey in their breakfast menus for the week. They'll be glad to, especially if you provide them with good honey at a good price. They'll like the idea so well that you will have a steady customer from then on!

4. Provide dripless containers for all restaurants that will promise to put them on every table or at least put honey on every menu.

5. Ask your grocery dealer if he will put up a display of honey in his front window. Or volunteer to install a display with tie-in honey posters near by.

6. If you live in a warm climate, make sure your honey stand reflects that it is HONEY FOR BREAKFAST WEEK. Put up billboard signs near your stand. Tell passers-by that you are making a special price on honey during this special week.

7. Tie small jars of your finest honey up in golden cellophane.

8. Give these small jars to the local girl scout troop. Sponsor a cooking contest among members of the local girl scout troop and stipulate the use of honey. Have the results on display at some central spot during HONEY FOR BREAKFAST WEEK.

9. Make use of your local paper to advertise your honey. It is best to run several ads if you can to follow up on your audience. If possible, see if your grocer will run a special on honey in his Thursday night food ad.

10. Check up on the honey display in your local grocery stores. If it is inadequate find out where the honey is purchased, and offer to put in an attractive display. Ask the storekeeper for a good location for your honey.

11. See if the bakery stores and delicatessen shops in town will run a special on honey baked goods during HONEY FOR BREAKFAST WEEK.

12. Distribute Honey for Breakfast folders which may be purchased from American Honey Institute, Madison 3, Wisconsin, at $1.00 per hundred.

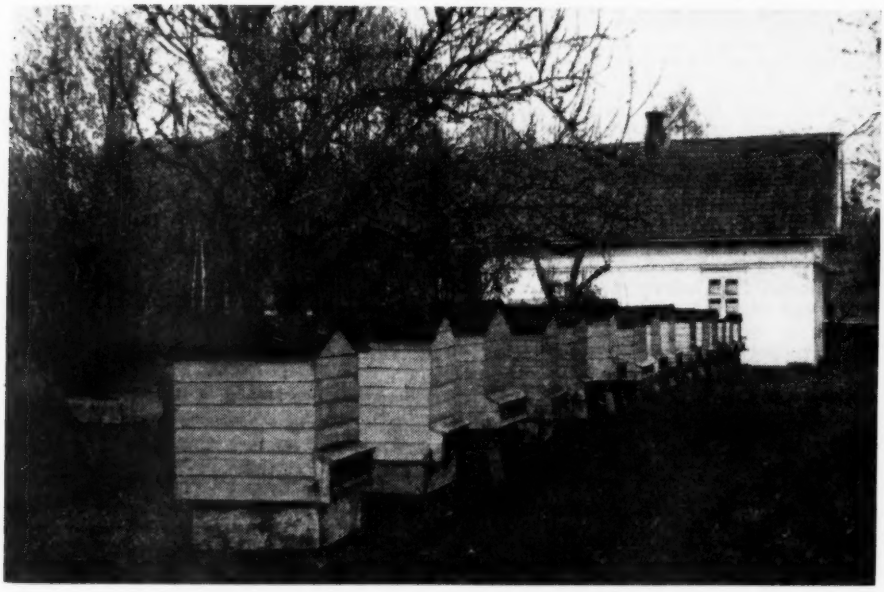
One of The A. I. Root Company's apiaries near Medina that has ample wind protection against the prevailing winter winds.

County Meetings – Life of the Industry

Vermont beekeepers inspect Clarence Hawthorne's apiary at the meeting held in Barnard, Vermont, on August 26, 1950. — Photo by Col. Ralph, South Woodstock, Vt.

Snapshot taken at the summer picnic of Clark County (Ohio) Beekeepers' Association on July 15, 1950. Reading starting in front from left to right: K. M. Boblett, Host; Mrs. A. A. Arthur, A. A. Arthur, President; M. J. Seifert, Treasurer; Mrs. M. J. Seifert, H. R. Swisher, Secretary; Mrs. H. R. Swisher, Billy Swisher, and Russell Musser.

Norwegian Apiary and Meeting



A typical well-kept apiary in Norway shows the care and attention of the owner. Notice the stands which elevate the hives.

This good meeting was held in an attractive-looking apiary on the Oslofjord. Photos sent in by Capt. Th. Thommesen, Horten, Norway.

Asked & Answered

Using Cyanogas Properly

Question: Last September I had to get rid of four hives of bees in a hurry. Without thinking about taking off the honey first, I put Cyanogas into the entrances of the hives and closed them up tightly with rags and then brought them home intact. What I would like to know is this: Is the honey in these hives spoiled and unfit for human consumption or not? — Chester A. Merrill, Maine.

Answer: So long as the combs of honey are exposed to the air for a time, this gas will pass off and according to best authorities it does not make the honey in the combs unfit for human consumption. The authority who made this statement said that Cyanogas powder should not come in contact with the honey. Ordinarily, this powder is put in the bottom of the hive and the gas being lighter than air travels up. Therefore, the gas destroys the bees but the powder itself would not come in contact with the honey if used as it should be. This question has been asked a number of times and it is an important question to have answered so that beekeepers may use Cyanogas properly.

Orchard Packages for Pollination

Question: You state that package bees for orchard pollination can be bought for pollination purposes without the use of hives. I am not interested in raising bees for honey-producing purposes, but if the package bees which do not require hives and special attention would do the job I believe that my trees would bear fruit better with more bees. Could bees be bought in two-pound packages, as I have only 30 fruit trees? About what would that size package cost?—J. F. Stewart, Ohio.

Answer: Orchard packages consist of either 4 or 5 pounds of bees. The package contains a can of sugar syrup with the friction-top lid pointing down, and with three or four small holes in the lid so that the bees can get the syrup through the holes while enroute. If the package arrives at the beginning of the fruit bloom honey flow, and if the weather is fine, additional feeding of sugar syrup may not be necessary. This can be done, however, by removing the feeder can and filling it with sugar syrup made of two parts granulated sugar and one part water. The package of bees is wrapped in building paper with tough string or twine holding the paper onto the package so that the bees will be protected from the rain and the weather. A one-inch auger hole is then bored in the end of the cage so that the bees can fly in and out. As a matter of fact, this auger hole is already bored and is covered by a wooden strip which may be easily removed when the package is placed in the orchard after the sides are wrapped with paper.

Chunk Honey in Shallow Frames

Question: Last year I tried for the first time to produce section and chunk comb honey in shallow supers. We had a slow flow here and found it was almost as hard to get bees to work shallow frames as section boxes with full sheets of thin foundation in both. We had a real swarming problem and it wasn't brought on by lack of room or shade. Colonies on drawn comb in the same location averaged better than twice the crop from comb honey colonies. Would it be possible and/or practical to try for chunk comb honey in standard full-depth frames with full sheets of thin foundation with no wiring? Can you supply this foundation? Has it actually been proved that bees work better on deep than shallow frames?—N. A. Nelson, Minn.

Answer: When bees have to draw full sheets of foundation it is quite essential that there be a reasonably heavy and continuous flow in order that wax may be secreted by the bees to build combs. When there is a very heavy flow lasting a few weeks or a month, colonies that have to draw full sheets of foundation will store almost as much honey as colonies that are given drawn combs. Ordinarily, when conditions are favorable bees will start work on sheets of foundation in shallow extracting supers as readily as they will in full-depth or standard supers. It would be necessary, of course, to add more shallow supers as needed in ample time during a good heavy flow to avoid congestion which is said to be the main cause of swarming. We would not recommend standard or deep supers with full sheets of thin foundation without wire for the production of chunk comb honey. Shallow supers are preferable. We do not wonder that you were troubled with swarming. Apparently there was not a sufficiently heavy flow to permit or encourage comb building. A colony of bees under these conditions would plug the brood chamber. This in turn would cause the bees to build queen cells which if not removed would eventually result in swarm-

ing. This is likely what happened in your colonies this past season.

Brown Sugar Not Suitable for Winter Bee Food

Question: Will you please advise me if brown sugar is all right for feeding bees? —T. H. Hahn, Kansas.

Answer: Brown sugar is not suitable for feeding bees, especially during the late fall months, as winter stores. Some time ago we attempted to feed bees brown sugar in the spring but they would not take the syrup made from the brown sugar. We recommend nothing but granulated sugar, either cane or beet, for feeding bees as a substitute for honey.

Can't Find Queen Bees

Question: I have 11 hives of bees which I wish to change to Italians next spring. How can I find the queens?—J. A. Zeestraten, Mich.

Answer: We suggest that you examine your colonies during the middle of the day next spring when the bees are working well on fruit bloom and dandelions. At that time of day a large portion of the bees are likely to be in the fields and it will be easier to find the queen. If you will apply a small amount of smoke, then start on one side of the hive, removing each comb and examining each side of each comb, it should be possible to find the queen quite easily. Another way to find the queen would be to shake nearly all of the bees from the combs in front of the hive after placing an entrance guard over the front of the hive. This guard permits the worker bees to crawl through between the wires into the hive but excludes the queen. After most of the bees have gone into the hive you can easily find the queen as she tries to get through the wires.

Requeening Without Dequeening

Question: In my backyard apiary of four colonies on August 12, 1950, I placed the queen of my best colony (80 pounds surplus) below an excluder in the brood chamber which contained a few partly-filled frames of honey, the rest empty combs. The second brood chamber held several frames of sealed and unsealed brood. My idea was to have the brood replaced by honey so that this would serve as a food chamber for winter. This chamber had an auger hole entrance. On inspection at the end of September I found the bottom brood chamber practically empty and two frames of sealed and some unsealed brood in the second chamber above the excluder. The colony had apparently requeened itself. Is this normal behavior and, if so, might this not be a good method to requeen in the fall?—E. H. Hamann, Conn.

Answer: It is not uncommon for a colony of bees to rear a young queen when a super containing brood, including eggs and larvae, is placed on top above the queen excluder, especially if there is an opening in this top super for the young virgin queen to get out to mate. When there is a honey flow on, both queens will remain in the hive, the young one above and the old one below the excluder. However, during a dearth of nectar the old queen below is usually disposed of and the young queen above retained. As you say, this would be one method of requeening in the fall which would amount to requeening without dequeening. Some beekeepers set the food chamber with some honey and a little brood onto a stand at the beginning of the main honey flow, making sure that the old queen is on the parent stand. In due time a young queen is usually reared in the food chamber set off. In the fall after the surplus honey is removed from the parent hive, the food chamber with the young queen is placed back on the hive from which it was taken earlier in the season. In most instances the young queen will be retained and the old queen disposed of. This is a simple method of requeening without dequeening. Furthermore, the food chamber which is set aside at the beginning of the honey flow is likely to have an abundance of honey when placed back on the parent hive in the fall.

Snow on Hives in Winter

Question: Is it necessary to keep the snow from the entrances of my hives?—James L Lindamood, Va.

Answer: Snow around hives during the winter does no harm so long as ice does not collect and freeze over hive entrances. Air will filter through snow and ventilate the interior of the hives. As a matter of fact, hives covered with snow are better protected than those not covered with snow. Some beekeepers bore a small auger hole about three-fourths inch in diameter in the middle front part of each hive so that the bees can get out easily in the event that ice or dead bees clog the main entrance below. This is a good idea for outapiaries. Where bees are at home one can watch the entrances from day to day.

Just News

The winter meeting of the Cuyahoga County (Ohio) Beekeepers' Association will be held on February 4 at the Museum of Natural History Auditorium, 2717 Euclid Ave., Cleveland, Ohio. The meeting will start promptly at 2 p.m. Dr. J. W. White, Head of the Honey Section of the Eastern Regional Research Laboratory in Philadelphia, who will be enroute from the Denver National Federation Meeting, will stop off in Cleveland to appear on the program. Dr. White has some up-to-the-minute information on honey.

A cordial invitation to all.

* * * * *

1951 Pollination Meet in April— The Federation's 1951 Pollination Conference will be held at Ardmore, Oklahoma, in April, sponsored by the Samuel Roberts Foundation.

Headquarters and most of the meetings will be held at Lake Murray Lodge, a few miles out of Ardmore. Modern facilities there are adequate for the housing of 300 guests, plus large meeting rooms. Some meetings will also be held on foundation research grounds.

The popular novelist, Louis Bromfield, will be speaker at the banquet the second evening of the three-day meet. Bromfield has experimented with legume pollination by honey bees on his own Ohio farm, as well as covering the subject in his writing.

A 12-man committee met in the middle of January at the Oklahoma A & M College to set up the program, according to Lyman Coe of the Federation's Honey and Pollen Plants Committee. Coe, an entomologist with the Noble Foundation, has been doing much preliminary work in the conference.

On this program committee are: Lyman Coe, Noble Foundation, Oklahoma; Dr. Lewis Hawkins, G. A. Bieberdorf, Ray Burley, all of Oklahoma A & M; Dr. F. L. Thomas, Texas A & M; J. H. Davis, Arkansas; Russell Pierson, Secretary of the Oklahoma Crop Improvement Association; Buford Cloar, manager of an Oklahoma feed company; Glenn Gibson, President of the Oklahoma Beekeepers' Association; Clyde A. Bower, Oklahoma; Charley Hanson and Phillip Allen, both of Texas.

* * * * *

At the January meeting of the **Erie County (Ohio) Beekeepers' Association** at the home of Carl Noftz of Milan, the following officers were elected for 1951: President, R. L. Livermore; Vice-President, George Miller; and Secretary-Treasurer, Stanley Wright.

* * * * *

The Pennsylvania State Beekeepers' Association's 48th Annual Meeting in Harrisburg on January 9 and 10, 1951, will go down in history as one of the best ever held. The efficient President Merle P. Fisher called the meeting to order and kept it moving along.

Harry B. Kirk, Senior Entomologist, in reviewing 25 years of inspection work, compared conditions in 1925—when 57 percent of bees were in box hives and 10 percent were diseased—with 1950 when less than 1 percent of bees were in boxes and only 3.6 percent of bees were diseased. 67,000 colonies were inspected this past year.

Prof. E. J. Anderson, Specialist in Apiculture at State College, commented on a peculiar disease or malady found in one part of the state this past year. Both sealed and unsealed brood were affected simultaneously. Cells of sealed brood contained dead bees and pupae, with the heads facing in instead of out. Experimental work did not result in a satisfactory diagnosis and further work will be done.

Nosema disease does not yield to treatment with the different chemicals.

Sulfathiazole treatment does not cure AFB. If the disease is bad—burn.

An experiment is under way to determine the nutritional value of honey. 180 rats are being fed. Results will be available later.

An interesting experiment is being tried in over-wintering young queens in nuclei. Results will be forthcoming in the near future.

Dr. W. E. Dunham, Apiculturist at Ohio State University, talked on

the modified two-queen system which consists of taking three combs of sealed and emerging brood with adhering bees from a strong colony at the beginning of the fruit and dandelion bloom and putting these, together with three combs of honey and some empty combs, into a hive body above a double screen and giving this upper hive a small entrance. The idea is to use two queens for producing a large force of bees in time for the main honey flow, then at the beginning of the flow discard the older queen and retain the younger one. Dr. Dunham also talked on swarm control, which in extracted honey production is not difficult provided young queens are used and supers are given in time to prevent congestion which is the main cause of swarming.

Charlotte Waldron, in calling attention to **Uses of Honey in the Home,** mentioned (1) honey for keeping baked goods moist; (2) it brings out fruit flavors; (3) it is good for wounds and burns; (4) it relaxes that high strung or nervous feeling; (5) it may be used as gifts; (6) a small amount mixed with water is good for plants.

The Round Table Discussion on increasing membership and interest in bee associations is mentioned editorially in this issue.

The Beekeepers' Banquet—a turkey dinner held the first evening—was a grand success.

W. W. Clark, Extension Apiarist at State College, estimates 25,000 beekeepers in the state. The past season was unfavorable for beekeeping owing to adverse weather conditions. Average yards should not have more than 25 colonies and should not be too close together. Red clover seed production has been increased by concentrating an adequate number of hives per acre. Three colonies per acre are to be tried out in 1950.

Officers elected for 1951 are: Merle P. Fisher, President; Paul S. Ziegler, Vice-President; and the faithful and efficient Secretary and Treasurer, H. M. Snavely, of Woodbury, Pennsylvania, was continued in office.—Jack Deyell.

* * * * *

The Cook DuPage Beekeepers' Association's Short Course and other agencies cooperating will be held at the Museum of Science and Industry in Chicago on February 9 and 10. A cordial invitation to every one to enjoy the unusually rich program.

Friday, February 9, 1951

10:00 a.m. Through the year with the honey bee colony—G. H. Cale, Editor, American Bee Journal.
11:00 a.m. Body structure of the bee and how they function — V. Milum Univ. of Illinois.
12:00-1:00 p.m. Recess for Lunch
1:30-2:15 p.m. Honey plants and beekeeping areas—Carl E. Killion, Chief Inspector of Apiaries, Illinois State Department of Agriculture.
2:15-3:00 p.m. Essentials in beekeeping equipment—G. H. Cale.
3:00-3:15 p.m. Recess
3:15-4:00 p.m. Brood diseases and their control—Carl E. Killion.
4:00-4:45 p.m. Comb pests and adult bee diseases—V. Milum.
6:30-7:30 p.m. Fall and winter management of bees — M. J. Deyell, Editor, Gleanings in Bee Culture, Medina, O.
7:30-8:30 p.m. Spring and summer management of colonies for production of extracted honey—G. H. Cale.
8:30-9:30 p.m. Spring and summer management for production of comb and bulk comb honey—Carl E. Killion.

Saturday, February 10, 1951

10:00-11:00 a.m. Nature of honeys and their care—V. Milum.
11:00-12:00 Methods of marketing honey—Art Kehl, G. B. Lewis Co., Watertown, Wis.
1:30-2:30 p.m. The two-queen system of management — Dr. W. E. Dunham. U.S. Dept. of Agriculture, Columbus, Ohio.
2:40-3:30 p.m Breeding and races of bees — Dr. W. E. Roberts, North Central States Bee Culture Laboratory, Madison, Wisconsin.
3:40-4:30 p.m. Pollination and seed production — Dr. W. E. Dunham,
4:30-5:30 p.m. Demonstration of beekeeping gadgets—Members of Cook-DuPage Beekeepers' Assn. and others.
6:00 p.m. Banquet.

(Continued on page 120)

Buy and Sell Here

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

NEW CROP of honey shipped daily from producer in Florida. Pure orange blossom, 5 lbs., $2.25; Pure Florida cut comb honey, 5 lb. pail, $2.75. No C.O.D. orders. All shipments prepaid. E. R. Raley, Daytona Beach, Box 1610, Florida.

ORANGE BLOSSOM HONEY in new 60's. Peter W. Sowinski, Fort Pierce, Fla.

HILTNER'S CRYSTAL CLEAR HONEY in decorated tumblers, 5-lb. jars, or 60-lb. cans. Your label if desired. Hiltner's Apiaries, North Creek, Ohio.

FOR SALE — Nine tons white clover honey in 60-lb. cans. Jos. Hoehn & Sons, Ottoville, Ohio.

ANY GRADE — any amount. Alexander Co., 819 Reynolds, Toledo, Ohio.

FANCY CLOVER COMB HONEY. Ralph Gamber, 910 State, Lancaster, Penna.

COMB HONEY for sale. — Gordon C. Pratt, Munnsville, N. Y.

MICHIGAN'S FINEST HONEY, new sixties, sample 15c. THAYER'S APIARIES, 2122 Ames, Saginaw, Michigan.

1500 cans white clover honey. Sample, 20c. John L. Tideswell, 2711 North 63rd St., Omaha 4, Nebraska.

CLOVER HONEY in new sixties, 12 cents per pound. Also creamed honey, 5 pounds, $1.75, postpaid within third zone. E. G. Kyte, Fairview, Pa.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on COD terms except where the buyer has thoroughly established his credit with the seller.

CASH FOR YOUR HONEY — Light extracted or comb. Regular trade send sample. 60-lb. cans furnished if desired. W. R. Moomaw, Stone Creek, Ohio.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 1360 Produce St., Los Angeles 21, California.

WANTED — White and amber honey. Any amount. D. F. Treap, 316 Keenan Ave., Cuyahoga Falls, Ohio.

HONEY AND WAX WANTED — Mail sample. Advise quantity. BRYANT & SAWYER, 2425 Hunter St., Los Angeles 21, Calif

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 2, Ohio.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

BEFORE YOU SELL your clover honey contact us. Send samples and tell us how much you have. The Delaware White Clover Apiaries, 139 West William St., Delaware, Ohio.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

WANTED — One car white to water white extracted honey. Willing to pay over Government Support Price. Send price and small sample. Lose Brothers, 206 E. Jefferson St., Louisville 2, Ky.

WANTED — Large quantities industrial honey. Please list amount, how packed, your delivered price. Sunkist Bee Co., Convent, La.

WANTED—All grades of extracted honey. Highest cash prices paid. Mail sample, state quantity. Honeymoon Products Co., 39 E. Henry St., River Rouge 18, Mich.

ALL GRADES HONEY AND WAX WANTED—Mail samples, advise quantity and cash prices delivered to us. HONEY SALES COMPANY, 1808 NO. WASHINGTON AVE., MINNEAPOLIS 11, MINN.

CARLOADS or less of honey and wax. Send sample and price. Alexander Company, 819 Reynolds, Toledo, Ohio.

SEVERAL CARLOADS extra white to water white honey. Describe honey and state your price. Old Taylor Honey Co., Harlan, Iowa.

FOR SALE

CLEAN UP AFB WITH SULFA. 25 tablets, 50c; 50, $1.00; 100, $1.50; 1000, $7.00. Write for big 64-page catalog listing many items not found in other catalogs. WALTER T. KELLEY CO., Paducah, Ky.

We carry a full line of ROOT QUALITY Bee Supplies. Prairie View Honey Co., 12303 12th St., Detroit 6, Mich.

FOR SALE — Write for large free Bee Supply Catalog. We manufacture bee hives, foundation, tanks, and extractors. Listing many items not found in other catalogs. Walter T. Kelley Co., Paducah, Ky.

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation, Onsted, Mich.

The only comb foundation plant in the East. We sell foundation, work your wax, render combs and cappings. Robinson's Wax Works, R. D. 3, Auburn, N. Y.

PURE POLLEN—Collected from disease-free colonies. Stimulate early spring brood rearing. One pound plus soybean flour and syrup makes 12 pounds of mixture. Pound, $1.30; 2 pounds, $2.30; 4½ pounds, $4.90; 9 pounds, $9.30 postpaid. Feeding instructions enclosed. University of Arkansas Fruit and Truck Branch Experiment Station, Hope, Arkansas.

BEE SUPPLIES — Comb foundation frames with eyelets in the end bars, one-piece tops and bottoms. Select pine hive bodies. Free catalogue. Williams Bros. Mfg. Co., 5205 S.E. 82nd Ave., Portland 6, Ore.

YOUR WAX WORKED INTO medium brood foundation, 23c pound;100 pounds, $18.00. Fred Peterson, Alden, Iowa.

100 two-story colonies of bees. Health certificate furnished. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation, Onsted, Mich.

COMPLETE Honey Producing Outfit. 250 2-story colonies, modern furnished home, large modern honey house, etc. Particulars if interested. Don F. Kloepfer, Rt. 3, Grand Ledge, Mich.

FOR SALE—Attractive bee business of 1800 colonies in productive clover territory, reasonable. Antelope Honey Farms, Neligh, Nebr.

FOR SALE—Wilcox uncapping machine, $150 or will take bees in Florida in exchange. Millard Coggshall, Minneola, Fla.

FOR SALE—200 3-story 10-fr. standard colonies of bees, more or less, now working on plenty of blooming orange trees. E. A. Bethurum, 1009 Clay St., Redlands, Calif.

FOR SALE—Large quantity of excess deep and shallow hive bodies, with frames or drawn combs, covers, bottom boards, etc. James B. Gray, P. O. Box 66, Sylvania, Ohio.

BEES, equipment, and truck. N. George Thompson, Sylvania, Ohio.

FOR SALE—15 hives of bees, 10-frame, with shallow extracting supers, plenty of stores. No disease. $10.00 each. W. R. Athey, Kyger, Ohio.

FOR SALE — 400 colonies equipment and locations. Arthur J. Heetebry, Rt. 1, Box 404, Ripon, Calif.

300 COLONY OUTFIT, about half filled with bees, to go at a bargain. Owner to enter full-time ministry. For particulars write Loyd Barnett, Gardner, Colorado.

HONEY LABELS

Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

Michigan Headquarters for

Root QUALITY

Bee Supplies

Complete Line of Bee Supplies and Honey Containers
Prompt Service

Michigan Bee and Farm Supply

510 N. Cedar St.
Box 7 Lansing, Michigan

Root Quality Bee Supplies

Prompt service from a complete stock of Bee Supplies.

If driving to Indianapolis for bee supplies, drive to our store, 121 N. Alabama St., and we will secure parking for your car.

A. I. ROOT CO. OF INDIANAPOLIS
121 N. Alabama Street
Indianapolis 4, Indiana

HONEY WANTED

Carloads and less than carloads. Mail sample and best prices in all grades.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

High Quality Italian Package Bees & Queens

Lots	2-lb.	3-lb.	4-lb.	5-lb.
1-29	$3.25	$4.00	$4.75	$5.50
30-up	3.00	3.75	4.50	5.25

Extra Queens, $1.00 each

I use only New, Neat, Light-Weight Shipping Cages and Ship Express Collect or Parcel Post when prepaid by customer. State Health Certificate and Live Arrival Guaranteed. Send requirements early for preferred shipping dates.

Carlus T. Harper
New Brockton, Ala.

Gaspard's Quality Italian Queens and Package Bees

We are now booking orders for 1951. Live delivery guaranteed and health certificate accompanies each shipment. 20% books your order. Balance 10 days before shipping date. A young laying queen in every package.

2 lb. pkg. with queen, $3.00
3 lb. pkg. with queen, 3.80
4 lb. pkg. with queen, 4.60
5 lb. pkg. with queen, 5.40
Queens, 90c

10% discount on 25 packages or more. For comb packages, add $1.10 per package.

Gaspard Bee Co.
Hessmer, La.

Queens Our Specialty
Italian, Caucasian, and Carniolans

Three Isolated Mating Yards to Prevent Mixing Breeds

ITALIANS ..... **$0.90 each**
Caucasians ..... **1.00 each**
Carniolans ..... **1.25 each**

All Queens shipped by Air Mail and guaranteed to please.

Walter D. Leverette Apiaries
Box 364 Fort Pierce, Florida

Package Bees and Queens

We now have a Southern shipping point in Georgia for early package bees and queens. Via R. R. Express Collect only. This is our same HARDY NORTHERN strain of bees.

3 lb. package with queen, $4.25; Queens, $1.15.

R. L. LIVERMORE APIARIES
Collins, Ohio

FOR SALE—Due to loss of honey house and equipment by fire, 800 colonies of bees in 10-frame hives, each with shallow super, best stock, young queens, 200 extra hive bodies, 500 extra shallows, all with drawn combs. 1946 Ford 1½-ton truck with special low, wide body. All or will divide. Located at Beemer, Nebr. E.H. Herrington, 1301 Forest, Denver 7, Colo.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

CAUCASIANS—Booking orders for 1951. Lewis & Tillery Bee Co., Route 1, Box 280, Greenville, Ala.

PACKAGE BEES headed by mountain gray Caucasians or leather colored Italian queens. Write for prices. Twin Bee Co-op., 3616 Caucasian Circle, Tampa 9, Florida.

BREWER'S LINE BRED Caucasian queens. Order for 1951. Member ABBA. Brewer Brothers Apiaries, 3616 Caucasian Circle, Tampa 9, Florida.

Delivery charges on Bambi brand package bees and Bambi brand extra queens WILL BE PREPAID. Please place your 1951 order early. Ecrivez nous en Francais si vous le desirez. Southern Apiaries & Supplies Co., Chatom, Alabama.

FOR THE BEST OFFER in 1951 Bees and Queens, write Cottage Hill Apiaries, Rt. 2, Box 64, Mobile, Ala.

YANCEY HUSTLER PACKAGES AND QUEENS—The old reliable honey-production strain. Will be ready April 1. Caney Valley Apiaries, 2500 Nichols, Bay City, Texas.

BEES FOR LEASE AND SALE—Montana, Wyoming, Idaho, Nebraska, Contact Bradshaw & Sons, Wendell, Idaho.

CAUCASIANS VS. ITALIANS mailed free to any address. C. S. Miller, Apiculturist, Rocky Ford, Colorado.

APRIL AND MAY SPECIAL. $6 Caucasian packages by express that will pay off the first year at war honey prices. Write Miller's Caucasians, Three Rivers, Texas.

GREEN'S profit-producing queens are the best, backed by 23 years of breeding better queens. 90c each. Phone 512M. D. P. Green, R 2, Deland, Fla.

GOLDEN QUEENS. $1.00. O. E. Brown, Route 1, Asheboro, N. C.

BEE SUPPLIES of all kinds. Catalog free. Hodgson Bee Supplies, Ltd., 565—13th Ave., New Westminster, B. C., Canada.

SEEDS

EVERFLOWERING LOCUST, novelty in long blooming tree, very quick growing windbreak, promising for nectar. First offering. Write for prices and particulars. Pellett Gardens, Atlantic, Iowa.

HONEY PLANTS, special SEED COLLECTION offers: 1, LEGUMES: 10 different packets, $1.00; 2, BEE-GARDEN: 6 packets (unusual), $1.00; 3, FOR NATURALIZING: 8 packets, $1.00; ALL 3 COLLECTIONS, $2.75; postpaid with planting directions. Our NEW 1951 CATALOG upon request. PELLETT GARDENS, Atlantic, Iowa.

The true imported EVERBLOOMING HONEY LOCUST, 4-foot trees, $1.75 when released, 5 for $7.50 postpaid. The THORNLESS HONEY LOCUST (thriftier than the common), our own growing, 7-inch seedlings, 50 for $2.50; 4-foot, 75c postpaid. Free—80-variety illustrated bee pasture catalog. NICOLLET COUNTY NURSERY, St. Peter, Minn.

WANTED

WANT 500 colonies and extracting equipment. Give full information in first letter. John Yanik, 16036 Edmore Drive, Detroit 5, Michigan.

WANTED—Good used FILTER PRESS. Give size, weight, condition, capacity, and price. Write Box 251, Gleanings in Bee Culture, Medina, Ohio.

POSITION WANTED

Swiss Bee Student, 27, single, wants position on Bee Farm from March to September. Some experience, driver with car. Theodore Isler, 1080 Abbott Blvd., Palisade, N. J.

HELP WANTED

CAPABLE single bee man for extracted production. Season, April-November. Give experience, age, personal habits, salary expected. Room, board furnished. Lavern Depew, Auburn, N. Y.

WANTED—Competent young beeman to share crop commercial apiary; also man for bee work. Excellent opportunity. C. H. Schrader, Sunnyside, Washington.

WANTED — Beeman to work bees on shares or monthly wages. Excellent locations. Baughn Stone, P. O. Box 606, Idabel, Oklahoma.

WANTED—Two men, one with several years' experience in commercial honey production, and one with some experience with bees, to assist in our 1300-colony outfit. State reference, experience, and wages expected in first letter.—Archie Kauffman, St. Johns, Mich.

CAPABLE single man for bee work in S. C., Conn., Mass., and N. Y. Give experience, if any, age, habits, salary expected. Room furnished. Season, March to December. Paul Engelhardt, Wallingford, Conn.

CAPABLE single bee man for extracted production. Start in April. Give experience, age, and salary expected. Gartner's Apiaries, Titonka, Iowa.

MAGAZINES

WESTERN CANADA BEEKEEPER—Official organ of the Manitoba Beekeepers' Association. One year, $1.50; two years, $2.25; three years, $3.00. In combination with Gleanings in Bee Culture, $2.75. 211 Affleck Bldg., Winnipeg, Canada.

Whittle's

Leather Colored Italians

Get your Packages and Queens when you want them. Reserve 1951 Shipping Dates Early. Write for Our 1951 Prices on Package Bees and Queens Our Bees and Service Will Please You.

G. E. Whittle
Star Route West
Greenville, Alabama

Plant's

Three-Banded Italians
Productive, Gentle, Easy to Handle

	1-24	25-99	100-up
2-lb pkg. with queen	$4.00	$3.75	$3.50
3-lb. pkg. with queen	5.00	4.75	4.50
Queens, postpaid	1.25	1.15	1.10

For larger packages add $1.00 per pound.
Package prices are by Express FOB
If packages are wanted by Parcel Post, write for prepaid price.

W. E. Plant
Hattiesburg, Mississippi

Italian Bees and Queens

We are offering you good quality queens and bees at a price you can afford. Write for price list, 1 or 1000 packages or queens. Trucking your bees? Write us.

Mitchell's Apiaries
Bunkie, La.

Package Bees and Queens
Shipped when you want them
Reserve your shipping dates early

2-lb. pkg. with queen	$2.85
3-lb. pkg. with queen	3.85
Queens	.80

Health certificate and live delivery guaranteed.
BAYOU BEE CO.
Rt. 1 Box 49 Montegut, La.

PACKAGE BEES

Our only business is the production of bees and getting them to you in the best of order. Our colonies are maintained in good strength and are kept in healthy condition at all times. No colony is petted or otherwise allowed to continue in a condition that would tend to produce weak bees.

Queens are produced by the best methods. We will have the "Three Way Hybrids" for early packages. State which queens you prefer—otherwise we will ship you our regular stock.

Prices for 1951	Queens	2 lb. w. queen	3 lb. w. queen
1-25	$1.10	$3.25	$4.25
26-up	1.00	3.00	4.00

For queenless packages deduct the price of queen.

"They Produce"

Rossman & Long

P. O. Box 133, Moultrie, Ga.

CAUCASIANS
CARNIOLANS

Hardy, prolific, rapid build-up, finest of workers, GENTLEST OF ALL RACES. Gentleness is safest in towns, near neighbors, or near the highway. Gentleness saves time, sweat, patience, and work. Northern breeders used.

Untested queens, $1.20 each,

Air Mail

Discount on quantity orders. Ask. Some packages yet. Ready March 1st. Over 25 years a queen breeder.

Albert G. Hann

La Belle, Florida

Yellow Italian Bees and Queens

We guarantee—Live delivery and health certificate.

2 lbs.	3 lbs.	4 lbs.	5 lbs.	Queens
$3.50	$4.50	$5.50	$6.50	$1.00

10% down will book your order. Balance 10 days prior to shipping date.

Oscar Arnouville, Hamburg, La.

Healthy Italian Bees & Queens

Write for 1951 Prices

Georgia Bee & Honey Apiaries

P. O. Box 312 Hortense, Ga.

KNOW interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarh, Dist. Naini Tal, U.P., India, or available from them. Subs. Rs7/ or 10 shillings or 2.25 dollars per annum. Single copy Rs¼ s. 1/9 or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

THE BEE WORLD—The leading journal of Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free. 12 cents stamps. Membership in the Club including subscription to the paper 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

ANGORA GOATS

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information in range sheep than any other magazine published. Subscription —$1.00. Hotel Cactus, San Angelo, Texas.

NORMAN BROS. Package Bees and Queens

For 1951 **We Again Offer You**

Our BRIGHT 3-BANDED ITALIANS, of superior quality, prompt service, full weight, light shipping cages, young baby bees, choice queens. Our 30 years as shippers of package bees and queens assure you of the best money can buy. Safe arrival, health certificate, satisfaction guaranteed in U.S.A. and Canada.

— — Prices — —

Untested Queens	$0.90
Tested Queens	1.75
2-lb. Package with queen	3.00
3-lb. Package with queen	3.75

All package bees are shipped express FOB. If wanted shipped parcel post add postage.

Norman Bros. Apiaries

RAMER, ALA.

Italian Package Bees and Queens

F. E. Morrison

Rt. 3, Box 3696, Auburn, Calif.

We are interested in Buying HONEY

Send sample and price

T. J. Paisley Co.

Medina, Ohio

York's Package Bees and Queens for 1951

Quality Bred Italians

The Strain Preferred by Leading Honey Producers

Quantity	Package Bees with Queens 1 to 24	25 to 99	100 up
2-lb. Packages	$3.50 each	$3.25 each	$3.00 each
3-lb. Packages	4.50 each	4.25 each	4.00 each
4-lb. Packages	5.50 each	5.25 each	5.00 each
5-lb. Packages	6.50 each	6.25 each	6.00 each
Queens	1.10 each	1.05 each	1.00 each

Queenless Pkgs., deduct $1.00 per pkg. Tested queens, $1.00 extra.

Place orders now for shipping dates wanted

York Bee Company Jesup, Georgia

(The Universal Apiaries)

Package Bees and Queens

For the past 23 years we have shipped package bees that have pleased. This is attested by hundreds of repeat orders received each year.

We specialize in our own 3-Banded Italians and Daughters of Dadant's Starline D. R. Hybrids.

Placement of your orders now will protect you against any price rise that may occur before shipping date. We offer you the benefit of any reduction should we later find it possible to make any downward revision.

Present Prices:

	Queens	2 lb. w/Qn.	3 lb. w/Qn.	Pkgs. with DR Qns.
1-24	$1.10	$3.50	$4.50	Add 35c
25-99	1.00	3.25	4.20	Add 35c
100-up	.95	3.00	3.90	Add 35c

Garon Bee Co. Donaldsonville, La.

BESSONET'S MARCH BEES AND QUEENS

We solicit large and small orders for March delivery and can load trucks if arrangements are made early. 10% increase in queen capacity and more package colonies to supply bees.

PRICES (Subject to change)

Quantity	Queens	2-lb. w. Q.	3-lb. w. Q.	4-lb. w. Q.
1-24	$1.15	$3.25	$4.25	$5.25
25-up	1.00	3.00	4.00	5.00

Bessonet Bee Company, Donaldsonville, La.

Three Band Italian Package Bees and Queens and Pure Italian Three Way D. R. Queens

Full weight. Prompt shipment. Young bees. State health certificate with each shipment. Live arrival guaranteed. Replacement or refund made promptly upon receipt of bad order from express agent.

Quantity	2 lb.	3 lb.	4 lb.	5 lb.
1-29	$3.00	$3.75	$4.50	$5.25
30-99	2.75	3.50	4.25	5.00

Untested Queens .....$1.00 each

Tested Queens .....$2.00 each

For queenless bees deduct $1.00 from the price of the package

If queens are wanted introduced, add $1.00 to price of the package

Jackson Apiaries Box 58 Funston, Georgia

Caucasian Queens & Package Bees
for 1951
Prices upon request
Howard Weaver
Navasota, Texas

Bees and Queens
Good Italians
Order early and get yours
3 lbs. with queen, $3.50
4 lbs. with queen, 4.50
Extra Queens, 75c each, postpaid
For queenless pkgs., deduct 50c each
The M. L. Tindal Apiaries
S R E Greenville, Ala.

Place Orders Now for
Ray's Hybrid Queens and Bees for vigor and gentleness., $1.00 per pound; $1.00 per queen.
Ray's Apiaries
Bee Hive, Loachapoka, Ala.

BEE LINES TO THE EDITOR

(Continued from page 68)

months for the beekeepers here, the anxious days should, if the weather turns fine and warm again soon, end and result in good crops being harvested."—A. J. S., N. Z.

[Excerpt from letter dated December 24, 1950.—Ed.]

"I noticed on the last pages of the December edition of Gleanings a complete index for all the past year and hope to see this in other years."—J.A.C., Mo.

* * * * *

TOO LATE TO CLASSIFY

FOR SALE—150 colonies, with supers. 10 frame. Strong, with ample feed. Can be divided. Write Bruce Morehouse, Montevideo, Minn.

TWO HUNDRED ten-frame requeened colonies certified Italians on good package, titi, tupelo, gallberry locations. A. V. Dowling, Valdosta, Georgia.

CERTIFIED ITALIANS, 75 cents pound. Write for prices on loose queen and other size packages. Valdosta Honey Co., Valdosta, Ga.

MY FREE CIRCULAR tells about one of the greatest of all honey plants—Vitex. This tree blooms three months. Trees and seed for sale, also other plants. John E. Johnson, Box 73, Verona, Mo.

WANT—Interest in commercial apiary. Share crop or what have you. Option to buy. Prefer Montana or Idaho. Miles Fowler, Sunnyside, Washington.

JUST NEWS

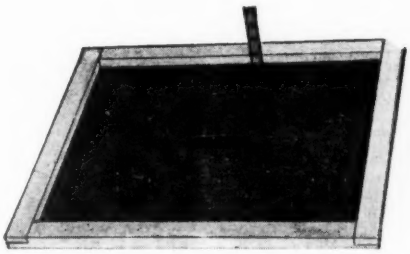
(Continued from page 113)

The latest in movies of bees. — Furnished by The A. I. Root Company, Medina, Ohio.

* * * * *

The Middlesex County (Massachusetts) Beekeepers' Association held its regular meeting at their new indoor quarters at the Commonwealth of Massachusetts Field Station in Waltham on January 27. It was voted to display beekeeping material at the Perkins Institute and Massachusetts School for the Blind in February at the request of the Institute. Most beekeepers know that the great Swiss scientist Huber devoted his life to studying bees and he invented one of the first movable frames for beekeeping and he was a blind man. It was also voted to have a bee display at the Massachusetts Horticultural Society Flower Show in March under the chairmanship of Prof. Robert Cheney of M.I.T. and his committee of Baptiste, Stevens, McInnis, Lothrop, Tinkham, Furber, Southwick, and Copeland. The display will have two glass observation hives, one on each side of the booth, with a dummy hive in each corner. The central theme is a glass-enclosed house with a hive of flying bees for the education of flower lovers and beekeepers. Any suppliers who have free literature on the subject of beekeeping for distribution to the thousands of people who visit the show each year may communicate with the Secretary of this Association, John H. Furber, M.C.B. Assn., 54 Oakland Ave., Auburndale 66, Mass. The next regular meeting of the Association is to be held at the Field Station on February 24 at 6:30 p.m. when further arrangements are to be made.—John H. Furber, Sec.-Treas.

GONNA FEED POLLEN CAKES?



Here's a piece of equipment that will prove a real helper!

An inner cover with a deep rim that allows that extra depth so needed to give a good feeding—and better yet it's made of masonite—the moisture from the pollen cakes will not cause it to swell or buckle. It holds its dimensions and wears like iron.

Order Yours Today

G. B. Lewis Company Watertown, Wis.

Colonie & Montgomery Sts.
Albany 1, New York

1117 Jefferson St.
Lynchburg, Virginia

92 Riverside St.
Chillicothe, Ohio

STOVER'S
SUPERIOR BEES

Reared Right **Priced Right**

Shipped Right
By
Express Truck Parcel Post

You don't get old, worn-out bees which have been through a honey flow when you buy from us, and one young bee in a package is worth at least two old ones. We run exclusively for packages and queens, shaking our bees every ten days to two weeks, which in itself assures you of predominantly young bees. Our business is producing bees and queens which will please you. If you haven't tried them, give us a trial order. If you have, you know what they will do.

PRICES

	Caucasians or Italians				
	Queens	2 lb. & Queen	3 lb. & Queen	4 lb. & Queen	5 lb. & Queen
1-24	$1.15	$3.50	$4.40	$5.30	$6.20
25-99	1.05	3.25	4.10	4.95	5.80
100-499	.95	3.00	3.80	4.60	5.40

No Charge for Clipping or Airmailing Queens
Packages F.O.B. Shipping Point
Tested Queens, $1.00 Each Extra
Queenless Package, Deduct Price of Queen

The Stover Apiaries Mayhew, Miss.

er, never working, always fed by others, a regular "man about town", until fall comes — and then suddenly nobody cares for father.

The drones are always killed off or starved by the bees themselves after the main honey flow unless the hive is queenless or has an unmated queen.

Bees to Carry a Pound of Honey

Actual weighings have shown that it takes about 20,000 bees to bring in a pound of nectar, which will make about one-fourth as much honey. It would, therefore, take 80,000 bees to bring in enough nectar, when evaporated and modified by the bees, to equal a pound of honey. It has been estimated that it takes 80,000 more bees to evaporate and modify four pounds of nectar into honey. According to these figures it takes 160,000 bees to gather and produce a pound of honey in a given period of a few hours or a day.

The average flying distance for a bee load may be a mile and a half. If one bee could gather enough nectar (four pounds) to make one pound of honey it would have to make 80,000 trips of one mile each, or fly the distance equal to more than three times around the globe.

Why Honey in Place of Other Sweets

The sweet found in flowers is not honey, but is similar to sweetened water. It is called nectar. Honey is the nectar of flowers gathered, evaporated, and modified by bees.

Nectar, or the sweet as it is found in the flowers, is chemically the same as cane sugar, but when the bees store it in their combs and seal it over it is converted into real honey, consisting of what is known as invert sugar, or about equal parts of levulose and dextrose, which means that it is in such a form that it can be absorbed without change in the human system.

Honey is much the same as the sugar that is found in most fruits. It contains, besides levulose and dextrose, mineral elements such as iron, lime, sodium, sulphur, magnesia, and phosphoric acid, so necessary to our human bodies.

Refined cane sugar has none of these elements, and if any of them were present originally they would be lost in refining. Before cane sugar can be absorbed into the human body it must be inverted by the digestive process into a sugar-like honey. In other words, refined granulated sugar, unlike honey, must go through one process of digestion before it can be utilized by the human system.

Italian Queens Package Bees

	1-49	50-99	100-up
2 lb. w/q	$3.50	$3.25	$3.00
3 lb. w/q	4.50	4.25	4.00
4 lb. w/q	5.25	5.00	4.75
5 lb. w/q	6.00	5.75	5.50
Italian queen	1.10	1.10	1.00

Packages are shipped with full liberal over-weight and live arrival guaranteed. Our dealings with you must be 100% satisfactory. Replacement or refund on any shipment when bad order receipt is received by us. Our queens are second to none in performance. Queens clipped on request and sent airmail postpaid.

Geo. A. Hummer & Sons
Est. 1892
Prairie Point, Miss.
Western Union: Macon, Miss.

KNIGHT'S
Three-Banded Leather-Colored Italan Bees and Queens
Prompt service, full weight packages, young laying queens, and your satisfaction guaranteed.

	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1-24	$1.20	$3.50	$4.50	$5.50	$6.50
25-49	1.10	3.25	4.25	5.25	6.25
50-up	1.00	3.00	4.00	5.00	6.00

For queenless packages deduct the price of the queen.
No Charge for Clipping

John T. Knight
Hayneville, Alabama

Italian Bees and Queens
For Quality and Service
Shipped When You Want Them

	Queen	2 lb. w. queen	3 lb. w. queen
1 to 24	$1.10	$3.50	$4.50
25 to 99	1.00	3.25	4.25
100-up	.90	3.00	4.00

Homan Bros.
Tel. 4295 R.F.D. 2
Shannon, Miss.

XUM

Own a Business of Your Own

This old established honey production business offered for sale. Proven territory with room to expand. Good roads; low taxes; all modern extracting plant with city utilities; in town of 1500, between Omaha and Sioux City, on Highway 77. Plant site has a 220-foot frontage in a valuable business and industrial district. Also our beautiful modern six-room home located in finest residential district, if desired. Correspondence invited. Curiosity seekers please refrain.

Russell-Barnes Apiaries
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Top Quality Italian
Package Bees and Queens
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Package Bees and Queens
For Quality and Service
KOEHNEN'S APIARIES
GLENN, CALIFORNIA

FOREHAND'S QUEENS
Safe arrival in U.S.A. and satisfaction guaranteed. Queens bred in desert and semi-desert areas, eliminating all cross breeding.
Prices: 1-25, $1.10 ea.; 26-100, 90c ea.
Heber Forehand, High Rolls, N. M.
(Formerly Ala. breeder)

* * * * *

KNOW YOUR MARKET

(Continued from page 89)

to the grocer at a figure so high that the grocer cannot make handling expenses will soon lose the cooperation of the grocer, and eventually the outlet for his products. In a like manner, to charge consumers a high price for honey which does not exceed in quality other honey with which it competes will kill any sales campaign and may lose an entire market.

The producer, therefore, has an obligation to both the grocer and consumer: the grocer must be given the profit incentive to push honey sales, and the consumer must be given a quality product at a reasonable price. This does not mean, however, that honey must be "given" away—we have done too much of that for years.

In the long run, to fix a price below the prevailing market may tend to demoralize trade conditions and result in cut-throat competition when no one will make any money. The producer should make every effort to standardize his prices among his stores so that one is not competing with the other.

Marketing Methods

The objective of all good marketing methods should be to develop good will built upon a policy of honesty, fair play, unselfishness, and service. No grocer or merchant should suspect that he is being charged more for your product than his competitor across the street, and no consumer should be given the opportunity to say that he can purchase your product in the same town for considerably less money. Such difficulties can be avoided by strictly maintaining a wholesale price system, and by mutual agreements on reasonable profits to the grocer.

The producer should avoid competing with the outlets in his own town, and should make every effort to help his grocers sell more. This can be done by advertising in the local paper and listing the stores that handle your particular brand, by supplying the grocer with one-ounce samples to be given to customers, and in special cases by building a small, neat stand outside the store to attract tourists. When the grocer learns that the producer is interested in his welfare as well as his own, and that he is willing to help him sell more, the grocer will become more cooperative and willing to push the sale of honey.

Given a good product a producer may build a big business on service alone, or he may lose everything he has on poor service. An empty shelf means a loss of sales and money to the grocer and the producer alike, consequently a close check on the grocer's supply should be maintained at all times without becoming too bothersome. In time the check can be made rather accurately by estimating the rate at

(Continued on next page)

(Continued from previous page)

which the honey moves. Usually the grocer cannot be depended upon to order more when he needs it because many consider it the producer's obligation to keep the shelves supplied.

Jars on the grocer's shelf should have a professional look at all times. That is, they should be arranged in an attractive manner, labels should be straight and clean, and any crystallized honey should be replaced immediately at no extra cost to the grocer. The same procedure should apply to comb honey as well.

When the grocer learns that the small producer's service is as good as or better than the large processor, and that the small producer is interested in maintaining high standards of quality, he will become a permanent, cooperative customer.

Conclusions

The successful marketing of honey involves many factors among which are: weather, color, flavor, size and shape of package, price, and marketing methods. To the producer each market should be a separate problem often requiring different methods of approach, but subject to the intelligent application of the above factors.

Having established a market the producer will hold it only by superior quality, and service that emphasizes the welfare of the merchant instead of his own. Each year his aim should be to produce only as much as his market will consume and no more.

In the long run over-production will result in lower prices and poorer quality to compete with cheaper sweets. Let's not forget that producing more at a loss only increases losses—it does not make profits.

Bring Your Dreams Down to Earth
Extra Savings Bonds Now.

Italian Bees and Queens

Comparison proves that Homan's profit producing bees and queens will please you from the brood nest to the harvesting of a great crop of honey. Best of quality and gentle, health certificate, full weight, prompt live delivery guaranteed.

Prices through May 15th:

Lots of:	Queens	Packages 2-lb.	3-lb.	4-lb.
1-24	$1.10	$3.50	$4.50	$5.75
25-99	1.00	3.25	4.25	5.40
100-up	.90	3.00	4.00	5.00

Farris Homan
Shannon, Miss.
Telephone: 4975

For a Happier Harvest you, too, can now get OK Famous Queens
Limit, new customers, 25 queens, $1.25 each.
2 lbs. package bees, $3.25
3 lbs. package bees, 4.00
Apiaries accredited and certified by the Alabama Department of Agriculture.
O. K. Anderson & Son Apiaries
Coffee Springs, Alabama

Dixieland's
Leather-Colored Italians Bees and Queens
Shipping dates open through April and May.
Send for our price list today
Dixieland Apiaries
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PACKAGE BEES AND QUEENS
"ITALIANS"
Booking orders — Write for our prices
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BEES and QUEENS

Young bees, free of drones—shipped when you want them after April 1st. Three banded Italian bees and Kelley's Island improved queens. Express or parcel post shipment.

2-lb. swarms with young bees and 1951 queens $3.50

3-lb. swarms with young bees and 1951 queens 4.50

1951 Improved Kelley's Island stock, prepaid air mail, $1.10 each.

Walter T. Kelley Co., Box 210, Paducah, Ky.

Guaranteed to Satisfy

	2 lb. w/q	3 lb. w/q	4 lb. w/q	
1-24	$3.50	$4.50	$5.50	Untested Queens, $1.00
24-99	3.25	4.25	5.25	
100-up	3.00	4.00	5.00	Tested Queens, $2.00

Gold Leaf Apiaries, P. O. Box 252, Hahira, Georgia

JENSEN'S

Tested Stock

By this we mean the kind with established records of performance under all conditions of climate and management. Produced by breeders who have specialized in queen rearing on a commercial scale from way back, and whose integrity has stood the test of time. Don't gamble with your honey crop.

"Magnolia State" Italians		"Dadant Starline D. R. Hybrids"	
1-24	$1.25	1-24	$1.50
25-99	1.15	25-99	1.40
100-499	1.10	100-499	1.35
500-up	1.00	500-up	1.25

Packages	2 lb. with Queen	3 lb. with Queen
1-24	$4.00	$5.10
25-99	3.75	4.85
100-499	3.50	4.60
500-up	3.25	4.35

With Magnolia State Italian queens. For "Starline" queens add 25c per package.

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Packages SUNKIST Queens

Guaranteed live delivery—satisfaction. Shipping starts about March 15.
One package or a truckload.

	1-24	25-50	50-up
2-lb. with queen	$3.50	$3.25	$3.00
3-lb. with queen	4.50	4.25	4.00
Queens — each	1.10	1.00	0.90

Sunkist Bee Company **Convent, La.**

Brazos Valley Apiaries
Cameron, Texas

Bees & Queens

Brazos Valley Apiaries
Cameron, Texas

ITALIANS OR CAUCASIANS

	1 Pkg.	2 or more
2 lbs. bees with young queen	$3.00 each	$2.75 each
3 lbs. bees with young queen	4.00 each	3.65 each

Over a quarter century in the same place, same business, under the same name, is my record. My motto: "I expect to do business with you again."

H. E. Graham Cameron, Texas

The Rich Honey Farms Jeanerette, Louisiana

Your choice of three outstanding breeds.
The best to be had at any price.

Regular Italians:

Our regular stock, bred for high honey production, will not swarm unless neglected. Positively gentle.

Caucasians:

We are using the best breeding stock to be had in America. These bees are grey in color and very gentle. Heavy producers.

Dadant's Starline Hybrids are Disease Resistant

This is a combination of Italian strains, each with outstanding traits. These are combined by artificial mating of the queen and drone mothers to assure you of uniformity in performance and to maintain the lines in a pure state. Nothing is left to chance. The standards of the originators of this stock are very high and exact.

Do not confuse this breed with the old resistant lines. These are uniform and gentle. May be worked in favorable weather without gloves and veil.

When ordering Starline Stock include 25c extra for each queen with or without package.

PRICES:

	Queens	2 lb.	3 lb.	4-lb.
1-24	$1.20	$4.00	$5.00	$6.00
25-99	1.10	3.75	4.75	5.75
100-up	1.05	3.50	4.50	5.50

BETTER BRED QUEENS THREE BANDED ITALIANS

Booking orders early helps very much in planning the year's business. Let us know your wants. We are prepared to handle any size order at the following prices:

	2 lb. package with queen	3-lb. package with queen
1 to 24	$3.25	$4.25
25 or more	3.00	4.00
Queens — Any quantity	$1.00	

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